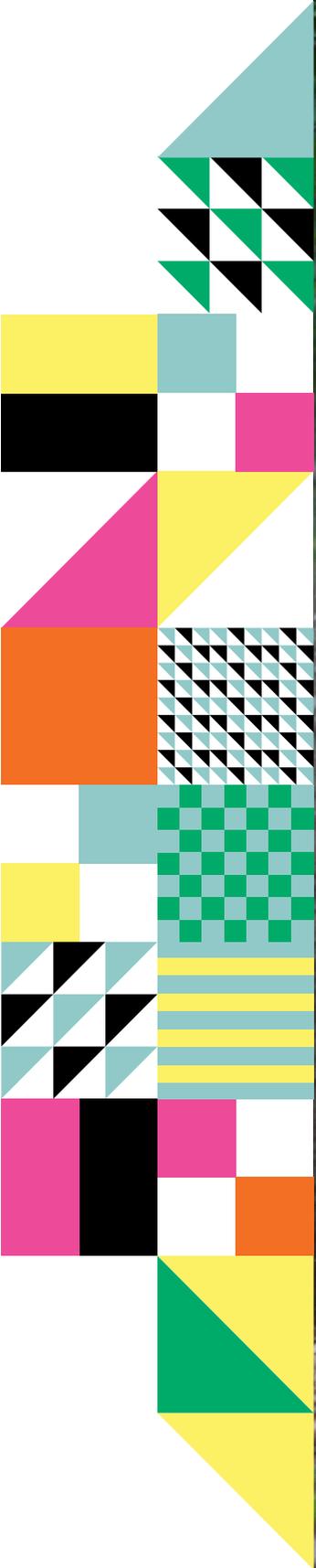


# G E M S +

## HEALTH SYSTEMS STRENGTHENING THROUGH PRIVATE SECTOR ENGAGEMENT LESSONS LEARNED FROM MALARIA ELIMINATION

THE LEARNING LEGACY OF THE GREATER MEKONG SUBREGION  
ELIMINATION OF MALARIA THROUGH SURVEILLANCE PROJECT  
2016 – 2022



# ACKNOWLEDGMENTS

The Greater Mekong Subregion Elimination of Malaria through Surveillance (GEMS/GEMS+) project, with funding from the Bill & Melinda Gates Foundation, began as an effort to improve the quality of malaria care in the private sector and ensure that data from private providers was available in the national surveillance system. As this was gradually achieved in the project's first phase, in its final three years, the focus shifted to integrating private sector data and engagement into the national health system to ensure sustainability. The project ran from 2016 – 2020 in Cambodia and from 2016 – 2022 in Lao PDR, Myanmar, and Vietnam.

The lessons learned by GEMS extend beyond malaria elimination and touch on wider issues of public-private partnerships, health systems strengthening, quality of care, understanding and engaging communities, effective disease surveillance, and working towards sustainability and government oversight of private sector engagement. However, the learning process

was not linear, and many of the assumptions held at project start needed to be adjusted over time. The project was designed to adapt in response to learning and data, which was constantly necessary.

Population Services International (PSI) has prepared this synthesis document to share its lessons learned and supportive evidence in the hope that these learnings will be transferable to others, who can avoid some of the pitfalls and build on the tools and models that were developed for this program. The lessons from this project demonstrate how the private sector can become an extended complementary force for the public sector in addressing health issues in different country settings. Strategies from the project may be replicable in other health areas as we work together towards more horizontal health management and universal health coverage in a context of reduced resources, increased risk of pandemics, and a growing need to respond to individual and community vulnerabilities.



PSI would like to acknowledge the many partners who have worked collaboratively with us over the last decade to engage the private sector in malaria case management, and in particular:

PSI Cambodia would like to acknowledge the partnership of the Ministry of Health of Cambodia, the National Center for Parasitology, Entomology, and Malaria Control (CNM), the staff of the Provincial and District Health Departments, as well as the as tireless staff of the public health facilities. PSI Cambodia recognizes the collaborative partnership that contributed to program successes and lessons learned from a wide group of malaria stakeholders and implementing partners including the World Health Organization, the Global Fund, and the US President’s Malaria Initiative. We would like to express deep appreciation to the private providers and volunteers who participated in the project. The team appreciates the level of effort by these providers to contribute to malaria elimination in Cambodia.

PSI Laos would like to acknowledge the Center for Malariology, Parasitology and Entomology (CMPE), as well as the Department of Communicable Disease Control (DCDC) and District Departments of Health,

for guiding the design and implementation of activities to achieve project goals. PSI Laos is grateful for the support and contribution provided by the public and private health providers in the public-private mix (PPM) network for malaria elimination in Lao People’s Democratic Republic (Lao PDR).

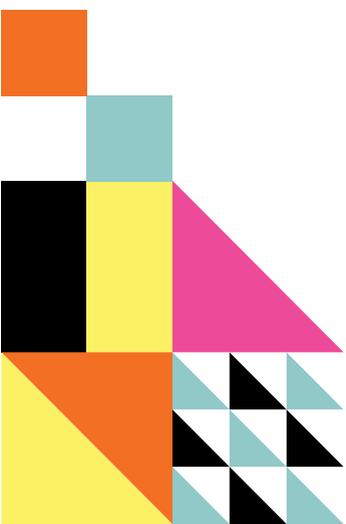
PSI Myanmar would like to acknowledge the Myanmar Ministry of Health, the National Malaria Control Programme (NMCP), and the Department of Public Health for guiding the design and implementation of activities to achieve project goals. PSI Myanmar is grateful for the support and contributions from private sector health facilities operated by Sun Community Health (SCH).

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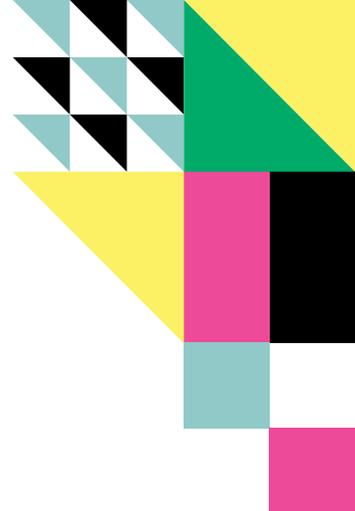
# ACRONYMS

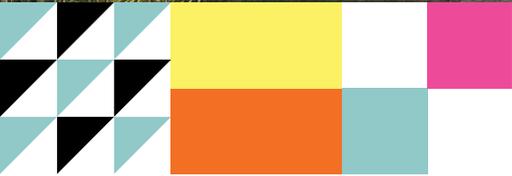
<b>ACT</b>	Artemisinin-combination therapy	<b>NMP</b>	National malaria program
<b>CHAI</b>	Clinton Health Access Initiative	<b>NSP</b>	National strategic plan
<b>DHIS2</b>	District health information software version 2	<b>oAMT</b>	Oral artemisinin monotherapy
<b>DQI</b>	Dynamic qualitative insights	<b>Pf</b>	Plasmodium falciparum
<b>EIP</b>	Empathy, insights, prototyping	<b>PHEOC</b>	Public Health Emergency Operations Center
<b>EOC</b>	Emergency Operations Center	<b>PPM</b>	Public-private mix
<b>GEMS</b>	Greater Mekong Subregion Elimination of Malaria through Surveillance	<b>PSI</b>	Population Services International
<b>GMS</b>	Greater Mekong Subregion	<b>Pv</b>	Plasmodium vivax
<b>HMIS</b>	Health management information system	<b>QAAC</b>	Quality-assured artemisinin combination therapy
<b>HNQIS</b>	Health network quality improvement system	<b>RDT</b>	Rapid diagnostic test
<b>ITM</b>	Institute of Tropical Medicine (Antwerp)	<b>SSV</b>	Supportive supervisory visits
<b>MMP</b>	Mobile migrant population	<b>UiO</b>	University of Oslo
<b>MMW</b>	Mobile malaria worker	<b>VMW</b>	Village malaria worker
<b>NGO</b>	Non-governmental organization	<b>WHO</b>	World Health Organization



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# GEMS LEARNING LEGACY

The Greater Mekong Subregion Elimination of Malaria through Surveillance (GEMS/GEMS+) project began with a simple idea: to ensure that private health care providers provided high quality malaria testing and treatment services and that data from the private sector entered the national surveillance system to inform decision making. With a significant proportion of the population in the Greater Mekong Subregion (GMS) seeking treatment for fevers from private providers (Nonaka D, 2009), engaging this sector was considered critical to achieving malaria elimination. Population Services International (PSI), with funding support from the Bill & Melinda Gates Foundation, partnered with the national malaria programs (NMPs) in Cambodia, Lao PDR, Myanmar, and Vietnam and with thousands of private providers on a learning journey. Along the way, other partners included the World Health Organization (WHO), the University of Oslo (UiO), the Institute of Tropical Medicine Antwerp (ITM), the Clinton Health Access Initiative (CHAI), laboratories, and other malaria implementing partners and technical experts – each of whom contributed to the project’s discoveries and iterations.

The project ran in two phases, the first phase (2016 – 2019), or GEMS, aimed to identify, recruit, train, and equip private providers to test and treat malaria in accordance with national treatment guidelines, and build a surveillance system capable of capturing, sharing, and using private sector data for decision making in all four countries. The second phase (2020 – 2022), or GEMS+, aimed to sustainably integrate private data into national surveillance systems and transition private sector engagement from NGO to government oversight and support. The GEMS-supported network of 25,000 private providers tested over 3.5 million suspected cases and detected 100,000 malaria cases, which in 2019, represented between 1.4 – 20.3% of the national caseloads in the four countries (WHO, 2020). By 2022, GEMS+ transitioned 64% of its network into national and subnational malaria program management structures. Additionally, by the end of the project, data from the private sector GEMS+ network were integrated into each country’s national Health Management Information System (HMIS) for 100% of confirmed positive malaria cases identified by the GEMS+ network in Lao PDR and Myanmar, 63% of cases in Cambodia, and 45% of cases in Vietnam.



## CAMBODIA

The GEMS/GEMS+ projects operated in Cambodia from 2016 – 2020, though PSI had supported Cambodia’s Public Private Mix (PPM) and worksite programs since 2013. In 2017, the PPM network contributed 40% of the national reported caseload (WHO, 2020); however, the Government of Cambodia banned the private sector from testing and treating malaria in April 2018, and the role of the private sector is now limited to referring suspected cases to health facilities. The main source of malaria care in remote areas is the government-managed Village Malaria Workers (VMWs) who can treat *P. Falciparum* (Pf) with ACTs and single low dose Primaquine but must refer *P. vivax* (Pv) cases to public providers for radical cure after the provision of ACTs. In 2019, PSI worked closely with the National Center for Parasitology, Entomology and Malaria Control (CNM) and provincial and district health authorities to improve alignment in access to commodities and data reporting between the PSI-supported worksite and community Mobile Malaria Workers (MMWs) and the government’s VMW system. This was a long process that required working closely with CNM’s malaria information system (MIS) team to integrate new geographic units and align reporting forms. The process resulted in improved mutual understanding and cooperation and provides a strong example of how system alignment can be approached. See the [Cambodia Case Study: Community-Led Malaria Elimination](#).



## LAO PDR

Prior to 2016, Lao PDR had an inactive Public-Private Mix (PPM) program, and the role of the private healthcare sector in supporting malaria elimination was very limited. In 2016, PSI partnered with the national Center for Malariology, Parasitology and Entomology (CMPE) to revive the PPM program. Private sector outlets in Lao PDR are allowed to test for and treat uncomplicated Pf. ACTs can be provided for Pv, but all Pv cases must be referred to district hospitals for G6PD testing before Primaquine can be prescribed for radical cure. Within the network managed by PSI Laos (2016 – 2022), providers with an Annual Parasite Index greater than 1 (API > 1) provided full malaria case management services operating the WHO Test, Treat, and Track (T3s) model. Providers with an API < 1 operated the Inform, Educate, and Communicate (IEC) model that calls for referring all suspected malaria cases to public sector providers (WHO, 2023). Lao PDR has made substantial progress in its surveillance system strengthening. Under GEMS/GEMS+, PSI advocated and worked with the government to ensure that private sector data were electronically integrated into the national system. This integration enabled access to timely case-based data with minimal burden of reporting on already-stretched district health staff. Building on previous experience, PSI implemented an evolving series of electronic surveillance solutions, with a later focus on sustainability and transition to government management. The government recognizes the importance of integrating private sector data for achieving and certifying malaria elimination; however, it is not without its challenges. PSI learned that having an appropriate technical tool is not sufficient. Processes must be in place to validate private healthcare providers before including them in the national health information system, as well as to verify data to ensure data quality.

Now that this system is in place and has been successfully mobilized for malaria, further efforts can continue to include more private sector providers and their data in the national health system. Private providers will continue to be a significant source of healthcare for a large proportion of the population, and lessons from malaria data integration can be used as a blueprint for surveillance and response in other health areas. See the [Lao PDR Case Study: Evolving Innovations for Data Collection, Integration, and Use](#).



## MYANMAR

All providers supported by PSI Myanmar– including approved, non-formal private outlets – can test and treat Pf and Pv and may prescribe Primaquine for radical cure of Pv. Under GEMS/GEMS+ (2016 – 2022), PSI Myanmar managed four provider networks in order to serve different populations: (1) Sun Community Health (SCH) general practitioners, formally known as Sun Quality Health providers (SUN), are qualified physicians, typically working in registered clinics, which tend to be located in urban and peri-urban areas. However, they also see at-risk groups who may travel longer distances to access higher quality care. (2) Private Outlets (PO) Providers are a diverse group of approved, non-formal providers (previously known as the Artemisinin Monotherapy Replacement program, or AMTR). This channel consists of retired doctors operating as mobile drug vendors, drug shops, and general retail stores used by rural populations. These outlets

tend to be in more remote areas, where they often have long-standing relationships with underserved communities. The POs are a similar network to (3) the NMCP's Integrated Community Malaria Volunteers (ICMV) system, in which some volunteers have medical training (e.g., auxiliary midwives), and all volunteers are able to provide integrated health care in line with government policy. ICMVs, formerly known as Community Health Service Providers (CHSP) but now working in line with the NMCP's volunteer system, are based mainly in rural areas, complementing the work of other partner organizations. PSI also engaged (4) Worksite Volunteers, which served worksite populations that were beyond the reach of other providers, but this network was closed in 2019 due to the low case detection of most of these providers. See the [Myanmar Case Study: Shaping Antimalarial Drug Markets](#).



## VIETNAM

Within the private sector offering malaria services in Vietnam, all clinics and only some pharmacies are allowed to test and treat malaria, per NIMPE policy (NIMPE, 2020). Other pharmacies, which cannot test or treat, refer suspected cases to the public sector provider, while community malaria champions (CMCs) may test and refer, but cannot treat. Under GEMS, PSI supported private clinics, pharmacies, and CMCs to either refer; diagnose and refer; or test and treat malaria, in accordance with national policy in four high malaria burden provinces of Gia Lai, Đắk Lắk, Khánh Hòa, and Bình Phước. PSI strengthened the capacity of private clinics and pharmacies through training and supportive supervision, resulting in greater confidence and active engagement of the private sector in malaria elimination. With the strategic objective to bring the public and private sectors together to work towards the shared goal of malaria elimination, the program has potentially opened doors to further public-private health cooperation in other health areas. Robust data demonstrated these tangible results, which convinced NIMPE of the effectiveness and importance of private providers in malaria case detection. This recognition by NIMPE and provincial partners led to the integration of private sector data into Vietnam's national surveillance system. The improvement in quality of malaria service provision was acknowledged by community members, and government agencies recognized the value of the data in building credibility and trust, which resulted in formal recognition of the role of the private sector

in national malaria elimination efforts. (Achmadi, 2021) This formal recognition now allows private providers access to government support for training, commodity supply, and supervision activities. See the [Vietnam Case Study: Strengthening Public-Private Health Sector Engagement](#).

Despite significant diversity in the country contexts, national health systems, malaria affected communities, and the private health providers themselves, the seven-year private sector engagement project to support surveillance for malaria elimination generated many transferable lessons for health systems strengthening, digital health, community engagement, and sustainability. Many of these lessons were supported by a variety of research activities and assessments, including outlet surveys, mystery client surveys, ethnographic studies, mixed methods research, a costing study, and program evaluations. The learnings presented in this document represent experience over time and the cumulation of many connected processes including trial-and-error and many iterations along the way. This document brings these learnings and evidence together as part of the program's legacy, and we hope that it will help others learn from our hard-won experiences.

# BACKGROUND

## WHY ENGAGE THE PRIVATE SECTOR?

Private providers in each of the Greater Mekong Subregion (GMS) countries are extremely diverse in terms of their structures, services provided, and motivations; and as such, there is no “one” private sector. It is estimated that as many as 70%-80% of the population in GMS countries seek health care – including for fever – in the private sector, although the average is lower and varies across countries (Nonaka D, 2009), (Bennett, 2017). However, there are long-standing concerns about (a) the unknown and potentially poor quality of care in the private sector; (b) the persistent use of poor quality or non-recommended drugs to treat malaria – particularly the use of oral artemisinin monotherapies that can contribute to drug resistance; and (c) the lack of availability of data from the private sector. Some of these concerns stem from different assumptions or observations regarding the limited regulation of some private providers – particularly in remote areas – including the persistent existence of non-formal (unregistered and unregulated) private health care providers or drug sellers and their lack of knowledge or incentives to follow national treatment guidelines. Additionally, the evidence base on provider motivation in a malaria context is limited, and maintaining or increasing provider motivation to test and treat is essential in the fight to eliminate malaria from the GMS. A lack of provider motivation is particularly concerning regarding malaria – a disease that is rapidly declining across the region and that will constitute a smaller part of a health practitioner’s business, and therefore represent diminishing financial interest. Understanding provider motivation helps to ensure that providers continue to pursue this goal, even in a low incidence environment where cases may be rare and in which providers face financial pressure to focus on other areas of health service provision (Brown, 2022).

Despite these concerns, and the potential for higher out-of-pocket costs, people in the GMS, including those in lower income groups, continue to seek

malaria care from private providers. GEMS research and engagement with community members revealed that reasons for this pattern of healthcare seeking behavior include:

-  Location and proximity
-  Longer opening hours compared to public facilities
-  Shorter waiting times
-  Fewer administration or documentation requirements
-  Better perceived quality of care, including customer service
-  Perceptions that commodities are more likely to be in stock and of high quality
-  Long-standing relationships with providers
-  Ability to pay on credit

As countries reach the last mile of malaria elimination in the region, comprehensive malaria case and testing data from both public and private sector providers are necessary to achieving and sustaining malaria elimination. While the private sector includes a diverse array of private providers, PSI focused on those that were most likely to serve people most at risk of malaria in each context. These providers typically included small health clinics and pharmacies, rather



than larger hospitals. In Myanmar, the program also focused on approved, non-formal private providers in more remote areas who provide treatment without being registered. Some of these providers, such as mobile drug vendors and sundry stores, may sell medication but are not medical practitioners.

## THEMATIC LEARNINGS

This document is organized around the following key thematic learnings, including tips on achieving results, and the evidence supporting these lessons.

### **1. PRIVATE PROVIDERS CAN CONSISTENTLY PROVIDE HIGH QUALITY CARE WITH GUIDANCE AND SUPPORT**

PSI identified private health care providers – typically at clinics and pharmacies – and provided training on national treatment guidelines, including correct use of rapid diagnostic tests (RDTs). Training was done either individually onsite or offsite in groups. Refresher training was provided on an annual basis. Through routine supportive supervision visits, PSI tracked provider performance against national treatment guidelines and WHO best practices. Most private providers sustained high levels of compliance. These results were also confirmed through mystery client surveys.

### **2. PRIVATE PROVIDER MOTIVATIONS ARE DIVERSE BUT CAN BE LEVERAGED TO ENGAGE THEM IN PUBLIC HEALTH EFFORTS**

Studies on the motivation of private providers revealed diverse reasons for private providers to (a) join the program and (b) continue to participate in the program. Our research revealed that motivations can change across providers and over time. As businesses, private providers are motivated in part by financial and material incentives (e.g., free commodities), but not exclusively. As individuals, contributing to their patients' and community's health is also an important

motivation, as is professional development and having a reputation for providing good quality service. Recognition from the government can also be motivating.

### **3. WITH APPROPRIATE SYSTEMS AND SUPPORT, PRIVATE PROVIDERS CAN GENERATE HIGH QUALITY DATA**

With a user-friendly way to report basic data, private providers are willing and able to regularly report malaria testing and case data, which was found to be of high quality in terms of accuracy, completeness, and timeliness according to data quality audits. Finalizing the appropriate data points can be an iterative process, and offering different options for reporting can be necessary to suit different providers. PSI started by using paper-based reports then evolved to use dedicated apps followed by chatbots in popular messaging services that were preferred by providers. Follow up can also be labor-intensive, yet technical solutions can increase regular reporting.

### **4. PRIVATE SECTOR DATA CAN BE INTEGRATED INTO NATIONAL HEALTH INFORMATION / SURVEILLANCE SYSTEMS**

While PSI's data systems were designed to be interoperable with national health management information systems, the challenge to integrating private sector data into government systems was more political and procedural than technical. It was necessary to build trust and confidence in the quality of the data coming from the private sector before it could be integrated. In all countries, however, the private sector was contributing 16% of the national reported malaria caseload across the subregion, with contributions ranging from 5% to 25% of the national caseload (Potter R, 2023). This contribution is significant in elimination settings where every case counts.

## **5. UNDERSTANDING AND ENGAGING AT-RISK COMMUNITIES CONTRIBUTES TO IMPROVED HEALTH SEEKING BEHAVIORS**

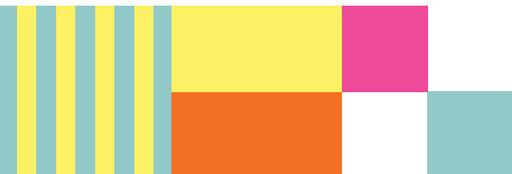
While GEMS initially focused on private providers, it was recognized that at-risk communities – particularly those who were remote or marginalized in some way – needed to be better engaged in order to (a) better tailor services to improve access and use of high quality care and (b) understand and address existing behaviors that were impeding malaria elimination, including slow treatment seeking, resisting malaria tests, preferring non-recommended treatments, or not completing prescribed malaria treatment.

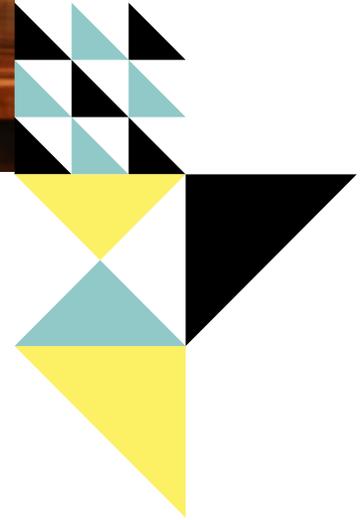
## **6. PUBLIC-PRIVATE SECTOR ENGAGEMENT CONTRIBUTES TO STRENGTHENED HEALTH SYSTEMS**

PSI began GEMS determined to ensure that private providers were delivering high quality health services and reporting data into the national health management information system (HMIS). In 2020,

phase II of the program shifted focus to integrating private sector engagement, supportive supervision, and data collection under the national health system management. This shift required a significant change in approach and focus, and recognition that the project would have been designed and implemented differently if this focus had been established earlier. The system that PSI had set up to support private providers was not sustainable without external support. Yet it achieved proof of concept and established an understanding of the essential pieces that needed to be sustained, although this required additional government investment in inadequately resourced public services.

The following section explores these themes by highlighting key lessons from each, with reference to supporting program documentation and evidence. A list of tools and templates available for adaptation appears in Annex 1.





# INCREASING THE QUALITY OF CARE DELIVERED BY PRIVATE PROVIDERS

Governments are often concerned about the quality of care provided by private healthcare providers, as they often lack the necessary monitoring and regulation enforcement mechanisms. This is particularly true for smaller providers and for non-formal or unregistered providers who may be operating unofficially. These concerns typically relate to the lack of compliance with national treatment guidelines, which is particularly critical in the GMS not only for the health outcome of the patient, but also for the potential impact on drug resistance that

may arise when incorrect drugs are used. Prior to GEMS (or prior to 2012 in Myanmar), it was unknown to what extent private providers were testing fever cases prior to prescribing malaria treatment, whether the correct malaria treatment was being used, and if antibiotics were being unnecessarily prescribed. Through the GEMS project, the quality of malaria care – in terms of adherence with national treatment guidelines – increased among participating private providers.

## KEY LEARNING

### **A. SUSTAINED SUPPORT TO PRIVATE PROVIDERS IMPROVES ADHERENCE TO NATIONAL GUIDELINES**

Quality of care was assessed in terms of whether a malaria test was conducted correctly (in accordance with WHO best practices) to confirm malaria cases and whether treatment followed national treatment guidelines. A satisfactory quality of care (QoC) score was defined as at least 80% for each indicator. At the start of the program in 2016, baseline outlet surveys indicated relatively high availability of diagnostic testing in the private sector, but lower access to first-line malaria treatments. The percentage of outlets offering diagnostic testing was 75% in Cambodia and Myanmar and 94% in Lao PDR. Provision of first-line malaria treatment was reported by 71% of outlets in Cambodia, 41% in Lao PDR, and 43% and 20% respectively for Pf and Pv in Myanmar (Khin, 2016). Overall malaria case management readiness (defined as providers having RDTs and first-line treatments in stock at the time of the study; having received training and supervision; and reporting data) increased from 18% at baseline to 80% at the end of the program in 2022 in the five southern provinces of Lao PDR and from 3% to 62% in Myanmar. Comparable baseline and endline data were not available from Cambodia or Vietnam.

Improved quality of care was achieved through a multistep process. First, private providers were mapped and invited to participate in PSI's program. They then received an orientation and training on national treatment guidelines on how to and conduct RDTs. Next, they received quality assured commodities and participated in regular supportive supervision visits (SSV) and quality assurance assessments.

Recruitment of providers was based on two types of data. Epidemiologic data were used to identify districts or townships with the highest risk according to national stratification criteria, with annual parasite incidence thresholds varying across countries.

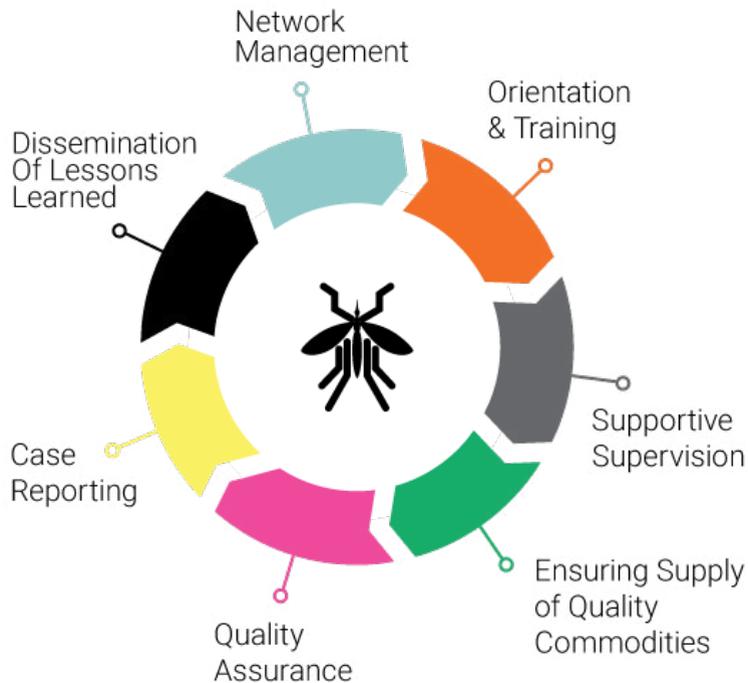
### **SOURCES**

Outlet surveys conducted in Cambodia, Lao PDR and Myanmar, with results summarized in R. Potter et al, "Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam", AJTMH 2022.

Learn more at: <https://doi.org/10.4269/ajtmh.22-0147>

### **SOURCES**

The process to improve quality of care was the same in each country, although the actual methodology varied. Documented examples can be found in the Private Sector Engagement Toolkits for PSI Cambodia, PSI Lao PDR, PSI Myanmar, and PSI Vietnam; all four toolkits are available at [psi.org/gems](https://psi.org/gems)



Outlet survey data describing the composition of the private sector for malaria case management were used to identify provider types that were already engaged in malaria case management based on availability of rapid diagnostic tests (RDTs) and antimalarials (Khin, 2016). Only private providers authorized by national guidelines to provide malaria case management were recruited into the program. Providers were also equipped with printed job aids. For lower cadres of health care workers, providing simplified guidelines was helpful for improving compliance. In some cases, supportive supervision was provided on a monthly or quarterly basis for several years, which contributed to helping providers feel engaged and motivated by not only checking on their work and providing reminders, but also by bringing and sharing information and making the providers feel part of something bigger. Cross-cutting to theme 2, leveraging private provider motivation for public health efforts.

GEMS prioritized robust quality assessment systems, and quality assessments were regularly carried out using the health network quality improvement system (HNQIS) – a DHIS2-compatible app run on tablets by PSI supervisors. The assessments used a checklist

based on national guidelines and WHO standards to assess quality in the following domains: 1) asking for symptoms and patient history; 2) physical exam; 3) RDT procedure; 4) diagnosis and treatment; 5) counseling; 6) documentation and reporting; and 7) workplace (essential tools); 8) equipment/supplies/consumables (storage of commodities, cleanliness, and privacy). The app also prompted the supervisor to provide real-time feedback on any areas needing improvement, while recording results for further analysis and follow-up.

In Cambodia, these results were also used to plan subsequent visits to individual providers, focusing on areas where they did not perform well during the last visit. This tailored approach to supervision further helped improve performance by focusing on specific areas of previous weaknesses.

Providers received a score of A (a score of 80-100%, signifying the provider needed less frequent assessment), B (50-80%), or C (<50%). Overall, scores increased over time. In Cambodia, the percentage of mobile malaria workers (MMWs) and private providers scoring A increased between 2014 and 2018 from 33% to 68% and 30% to 65%, respectively.

Across the board, areas in which providers typically performed less well were verbal assessment of symptoms and counseling. These aspects are often overlooked, yet are important to improve, as an outcome harvesting evaluation in Vietnam revealed that good communication between a provider and client improves the overall experience of care, and results in better health outcomes.

PSI recognizes that there were some limitations to the quality assessment. For example, there was no evaluation of quality over time in a control group of private providers to assess what might have happened without the GEMS intervention. We also conducted neither a specific evaluation of training effectiveness nor a longitudinal study to track how quality of care evolved for each individual provider over time. It was therefore difficult to determine the extent to which individual components of the program, such as training or SSV, contributed to improving and sustaining quality of care. As providers see fewer malaria cases, however, some have shared that reminders and refresher training are helpful, as is some accountability, which has been recommended for continued support by the government or other partners to maintain private sector quality of care.

## **B. QUALITY OF CARE VARIES BY CONTEXT AND TYPE OF PROVIDER, AND A ONE-SIZE-FITS-ALL APPROACH IS NOT APPROPRIATE FOR IMPROVING QUALITY**

Quality of care varies across different types of private providers, but little is known about what drives these differences. PSI monitored quality of care with a focus on where malaria prevalence was highest. These areas were identified by mapping quality of care scores with malaria case detection data to help target additional support. However, low malaria prevalence can be a driver of lower quality of care, as providers lose the habit of performing tests or keeping up to date with treatment guidelines. Cross-cutting to theme 3, generating high quality private sector data and creating linkages between quality of care and good business perceptions.

PSI also conducted mystery client surveys\* in each country to further triangulate quality of care. A trained study team (individuals or often a pair including someone from the community and a PSI field researcher posing as a relative) visited each selected private sector facility. Researchers would present themselves as a client with malaria symptoms and observe provider interaction and behavior. After each visit, the researchers recorded the process and observation of

### **SOURCES**

Vietnam outcome harvesting report 2021. An outcome harvesting approach was selected as the primary methodology for the evaluation to identify, formulate, verify, and make sense of outcomes. Additional methodologies included key informant interviews and a desk review

### **SOURCES**

ASTMH 2020 Poster: Impact of private health sector engagement interventions on provider quality of malaria case management in Cambodia, Lao PDR, Myanmar, Vietnam (Based on mystery client surveys from each country)

provider behavior. This methodology presented an opportunity to assess whether patients who reported fever were tested for malaria, whether the RDT was carried out correctly, and whether they received treatment in accordance with the diagnosis.

Mystery client survey results indicated that RDT testing was highest in Lao PDR and Vietnam, reaching 100% when providers were prompted by clients to test. Unprompted testing was highest in Vietnam (91%) and increased in Lao PDR from 35% in 2018 to 54.4% in 2019. Testing levels were lowest in Myanmar and varied greatly by provider type: levels were highest among community-based volunteers and lowest among medical doctors, who tended to rely more on their clinical judgment. Adherence to RDT process steps also varied across countries: for example, glove wearing ranged from 26% to 95% in 2019, and waiting for the correct duration of time before reading RDT results ranged from 16% to 100%. These results provide an objective complement to routine program activities that assessed provider quality and can provide valuable information for program improvement.

Mystery client surveys were conducted at different points in time in each country, and changes – usually improvements, but not always – were observed. Comparable endline results are not available due to challenges of operating within the context of the COVID-19 pandemic (i.e., prolonged lockdowns in 2020 – 2022) that prevented endline study implementation.

**\*While not related to quality of care, the mystery client surveys also served to see how much providers were providing for malaria test and treatment services. While the commodities were provided to providers free of charge with the expectation that this would reduce costs to patients, providers were still able to charge for services. Recent mystery client survey results show that charging varies. For example, the most recent results available from Lao PDR show that some providers charged nothing, most charged between 10,000 to 20,000 kip (USD 0.50 to USD 1).**



## MYSTERY CLIENT RESULTS

### CAMBODIA

**97% of mystery clients** were tested for malaria, and all but one received a negative test result. Among the clients who visited formal private providers, **63.5%** were spontaneously tested by the provider without having to prompt or request testing, while **88%** of clients who visited MMWs and **78%** of Village Malaria workers were tested. As almost all mystery clients tested received a negative diagnosis for malaria, none received any ACT, primaquine, or other antimalarial treatment. Only **14%** of those who visited a formal private provider and **5.3%** who visited MMWs received an antibiotic. Tests were performed correctly, although the process was explained as rarely as **5%** and only **7%** of providers wore gloves.

### LAO PDR

**Between 90% and 100% of providers** asked mystery clients about other symptoms, and **85%** of clients were asked if they worked in or had recently been exposed to the forest. All clients received an RDT where available (n=114). **54%** of those who received an RDT received the test without prompting. All mystery clients received the correct diagnosis (negative), did not receive any antimalarial, and were managed according to the national treatment guidelines. **Nine percent** of those who tested negative received an antibiotic, and **51%** received painkillers. Nearly all providers performed the test in a clean area and cleaned the patient's finger with an alcohol swab. However, only **26%** wore gloves while performing the test.

### MYANMAR

**47% of private providers** spontaneously provided an RDT to the mystery client, increasing to **56%** after prompting by the mystery client (this varied by provider type: **71%** for community health workers, **48%** for health clinics, and **39%** for other private outlets). **26%** of providers gave antimalarials without any blood test and **17%** referred the client. Of providers who conducted an RDT, **95%** followed the five key steps and **98%** of clients who received a negative result were not given any antimalarial medicine. Despite negative test results, providers prescribed **0.2%** ACT, **0.1%** primaquine, **1.0%** chloroquine, **39%** antibiotic treatment, **62%** provided another treatment for symptoms, and **15%** provided no treatment.

### VIETNAM

**Most providers asked mystery clients** when symptoms started, and **66%** asked whether the client worked in or had recently been exposed to the forest (**59%** in pharmacies and **72%** in clinics). **68%** of clients in clinics and **62%** in pharmacies received an unprompted diagnostic test for malaria. All clients received a correct diagnosis (negative) in pharmacies, and **99%** received a correct diagnosis in clinics. Following a negative test result, no client received antimalarial treatment/ACT, while **1%** in pharmacies received an antibiotic and **2%** in clinics. RDTs were carried out correctly, however only **60%** wore gloves while performing the test. **69%** of providers used a watch or timer to count the wait time; only **5.4%** in pharmacies and **22%** in clinics waited enough time before reading the result.

### **C. COORDINATION AND SUPPORT CAN INCREASE AVAILABILITY OF FIRST-LINE TREATMENTS AND REDUCE AVAILABILITY OF BANNED COMMODITIES**

Another concern regarding quality of care in the private sector was regarding the use of low quality and unapproved drugs. Of the four country programs, Myanmar was the most concerning in terms of the high availability of oral Artemisinin Monotherapy (oAMT), which was banned in the country to prevent drug resistance. A private sector antimalarial outlet survey in 2012 found that oAMT was available in 67% of surveyed outlets, while only 4% stocked quality-assured ACT (QAACT), and 3.5% stocked RDTs (Khin, 2016). Similarly, only 4.3% of private providers knew the first-line treatment for uncomplicated Pf malaria. This data triggered a response by the Myanmar National Malaria Control Programme (NMCP) and the Food and Drug Administration (FDA), with the support of PSI. This coordinated response included:

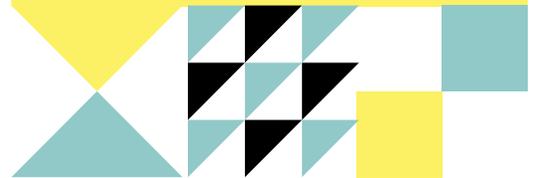
- Banning the import of oAMT
- Social marketing of subsidized QAACT
- Training private providers on national treatment guidelines
- Awareness raising among the community.

The program targeted non-formal providers in particular. Although these providers were not necessarily authorized to sell drugs, they were nevertheless a large source of antimalarials in the market, and their inclusion was therefore necessary as a harm reduction mechanism (ACTwatch Group. T. S., 2017). Due to the successful replacement of oAMTs with QAACTs, the provision of RDTs was later added for some non-formal providers who were trained on their correct use in areas with few other health service options.

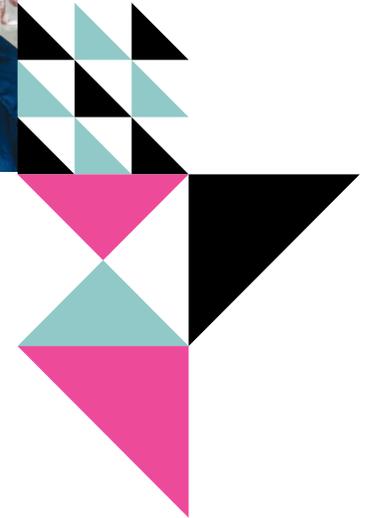
An outlet survey conducted in 2019 showed that availability of QAACT among the antimalarial-stocking target outlets in the PSI-supported areas increased from 4.2% in 2012 to 29.1%, whereas availability of oral AMT decreased from 66.9% to 3.6%. Malaria RDTs were available in 24.4% outlets, up from 3.5%.

### **OUTLET SURVEY REPORT: MYANMAR 2019**

\*This was a quantitative cross-sectional survey conducted among a representative sample of malaria medicine outlets supported by the GEMS project, non-intervention outlets located the GEMS-supported areas, and non-intervention outlets located in non-GEMS supported areas. The study population were all outlets that distributed antimalarial medicines or provided malaria blood testing.



Providers' knowledge of first-line treatment for uncomplicated Pf malaria increased from 4.3% to 24%. The availability of antimalarial medicine was higher in PSI-supported areas compared to non-PSI-supported areas among all PSI-supported outlets (39.0% vs. 27.9%) and non-PSI supported outlets (59.7% vs. 51.2%). The availability of QAACT among antimalarial-stocking outlets was higher in the PSI-supported areas\* than the non-PSI-supported areas for all target outlets (42.4% vs. 32.6%) and non-target outlets (86.3% vs. 74.7%), suggesting that the intervention had an impact on the entire market beyond the program area. Oral AMT was also lower among target outlets in the PSI-supported areas (1.2% vs. 6.2% in non-supported areas). These results demonstrate the power of a concerted coordinated approach to shift entire drug markets.



# LEVERAGING PRIVATE PROVIDER MOTIVATION TO ENGAGE IN PUBLIC HEALTH EFFORTS

Private providers in each of the GMS countries are extremely diverse in terms of their structures, services provided, and motivations; and as such, there is no “one” private sector. As businesses, private providers change rapidly in terms of the services they offer or where they are located. Private providers can open and close frequently, making it difficult to maintain consistent networks and track coverage. In most GMS countries, there is no private provider coordinating structure, such as a union or association, and in the rare cases that associations do exist, they do not necessarily include all private providers. Although private outlets may therefore work in isolation from each other, they may also operate in a combination of cooperation and competition with each other. Against this backdrop, PSI wanted to understand the motivation of private providers to participate in a malaria elimination program. This information could then be used to influence appropriate malaria

testing and treatment behavior, particularly as malaria declines in the region and constitutes an extremely small proportion of most health providers’ business. PSI’s role was therefore to serve as an intermediary in supporting and organizing the private sector to prepare for engagement or integration into wider public health systems. There were concerns that some private providers would no longer stock malaria testing and treatment commodities without PSI’s support, which could have reduced access to these services – particularly in areas that were not reached by public health services or community health workers. By better understanding the motivations of diverse private providers and designing an approach and support for integration into national systems accordingly, private providers can be willing and able to deliver care in accordance with national guidelines and share high quality data as part of a functioning mixed health system.

## KEY LEARNING

### **A. PRIVATE PROVIDERS ARE DIVERSE, AND THEIR MOTIVATIONS ARE MULTI-FACETED. SUPPORT AND INCENTIVES NEED TO BE DESIGNED ACCORDINGLY TO ENSURE OPTIMIZATION, EFFICIENCY, AND SUSTAINABILITY.**

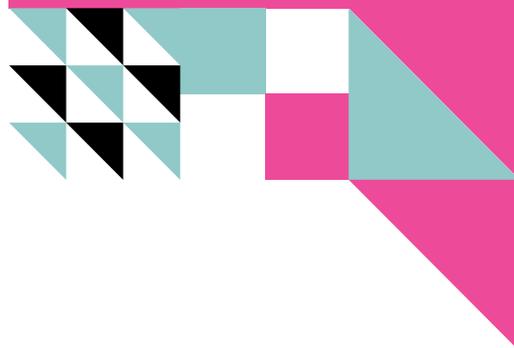
During the initial stages of the GEMS program, PSI offered training and material incentives to private providers to participate in the program, which included free commodities (RDTs and ACTs), phone credit (to support data reporting), and practical promotional items to be used in health settings. Some community-based providers also received performance-based financial incentives. However, performance began to stagnate after the first couple of years as the novelty wore off for providers, and it was recognized that these incentives were no longer sufficiently motivating to providers. Efforts were therefore made to better understand how to inspire and sustain provider motivation to test, treat, and report malaria.

In Myanmar, provider preferences for material incentives were quite clear and consistent: RDTs were the first preference (which are not available on the open market in Myanmar) followed by ACTs. Additional motivations included receiving guidelines and information, education, and communication (IEC) materials, testing accessories, and promotional materials (particularly those that were useful in the workplace). While profit and financial gain were important, many other motivations also influenced decisions and behaviors. Providers highlighted that being trusted and considered reliable by the community was a significant factor in their satisfaction. Receiving positive feedback from patients and their community was highly valued. Several providers also derived satisfaction from being able to provide malaria services free of charge to their clients. PSI was able to identify and tap into other motivations, including professional reputation, community well-being, patient and government recognition, interest in training and learning, and being connected with other providers.

### **SOURCES**

M. Brown et al., "Motivation to test, treat, and report malaria cases: a quantitative assessment among private sector providers in the Greater Mekong Subregion," *Malaria Journal* (2022) 21:82 <https://doi.org/10.1186/s12936-022-04108-7>

This research was conducted through quantitative questionnaires administered electronically in person by trained enumerators to various provider groups in Myanmar, Lao PDR, and Vietnam. A three-stage confirmatory factor analysis was then conducted in STATA.

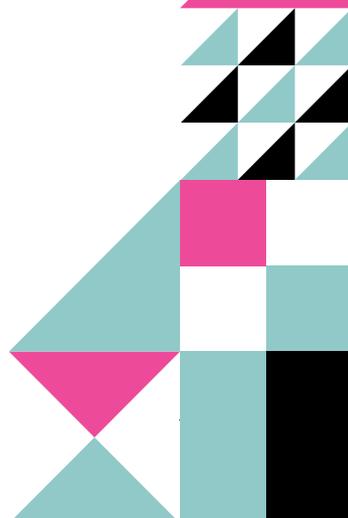


These motivations are as diverse as individual personalities, although some clear patterns emerged. Providers seemed to be motivated by receiving recognition and acknowledgments that conferred their credibility as a provider. Motivations may also change over time, and financial or educational rewards may experience diminishing returns as other motivations, such as recognition from the government or a reputation for providing quality care, can increase in importance. These incentives might also be more cost effective than providing material or financial incentives, suggesting that initially engaging private providers may be more expensive, but maintaining motivation over time can become less costly.

The reasons providers gave for joining and staying with the PSI network were training, quality assurance checks by PSI, and regular connection with the network. These activities contributed to providers' motivation and confidence. While providers still highlighted PSI's support and resources, including products and trainings, as reasons for staying, they also shared that they were satisfied with their work and showed a willingness to serve their community. Providers showed a great desire to continue in the PSI malaria program, and most stated that even if PSI stopped support or the number of cases sharply declined, they would continue performing RDTs. Some mentioned that they would still buy RDTs from other outlets; however, some had concerns regarding how and where the private providers would continue to acquire the RDTs, given that they were not available on the market.

This research aimed to generate insights that would lead to actionable programmatic recommendations. While 16 priority issues were identified, the following top insights were prioritized, based on their importance and feasibility:

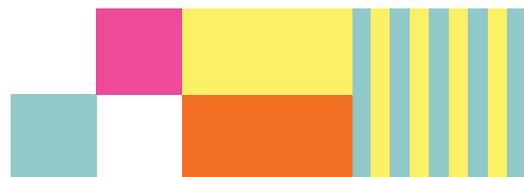
1. Strategies for engaging private sector providers need to be modified for a low caseload reality
2. Providers tended to fall back on old habits or adopt new bad habits that were not in line with quality of care guidelines.
3. Providers used clinical judgment instead of following guidelines because of doubts about RDT efficacy
4. Providers expressed concerns regarding patient self-medication and client demand for medication
5. Regular connection with a network and its members builds motivation
6. Training, high quality products, and engagement build provider confidence
7. Reporting forms are often completed by PSI staff during their monitoring visits due to low confidence of providers
8. Malaria elimination is not a strong motivating factor for engagement
9. Community respect is enhanced by participating in the malaria program.





In Vietnam, PSI also responded to the needs identified in a provider motivation survey and observed improved performance. Responses included providing government recognition to the private sector, including issuing Certificates of Recognition to high performing providers, and informing providers that their data had been verified and integrated into the national reporting system. These simple measures made providers feel respected and that they were contributing to an important national goal. As in Myanmar, the provision of training and quality assurance activities also strengthened providers' commitment while improving their performance.

Moving towards sustainability, government acceptance of private providers as an important part of the health system and recognition of their capacity is a motivating factor for private providers. The process requires minimal inputs beyond meetings and communication. To be effective, however, maintenance of a performance assessment system or some form of supervisory supervision is also required, which is discussed further under theme 6 (sustaining public-private sector engagement through health system strengthening).





# GENERATING PRIVATE SECTOR DATA

While high quality malaria testing and treatment in the private sector are critical to malaria elimination in the GMS, PSI also had a commitment to ensure that high quality testing and case data from this sector were available to the NMP surveillance systems in a timely manner to support decision making. This activity was originally approached as a technical undertaking by putting a system in place and training providers to use it. However, PSI soon learned that this objective required individual behavior change on behalf of private providers and organizational change management both within PSI and in public sector.

## KEY LEARNING

### **A. PRIVATE SECTOR DATA STRENGTHENS THE SURVEILLANCE DATA**

Over the course of the GEMS project, the size of the private sector network fluctuated significantly both as a result of changes among private providers, and as a deliberate strategy to refine the network for more efficiency in preparation of transition to NMP oversight. At its peak in 2019, nearly 22,000 participating private providers in the four countries reported 3,521,586 suspected cases and 96,400 confirmed malaria cases into national surveillance systems, representing 16% of the total reported caseload in these countries (Cambodia, 25%; Lao PDR, 5%; Myanmar, 12%; Vietnam, 8%). At times, test positivity rates in some countries, such as Vietnam, were higher than national rates, indicating that private providers were indeed able to reach the right people for testing. Despite initial skepticism that the private providers would have little to contribute to national surveillance, these results demonstrate that the private sector is important to include when approaching diseases that require a national response.

Furthermore, private providers working with PSI were also encouraged to collect additional information, including age, sex, occupation, and forest exposure, in order to develop a clearer profile of the people most at risk. This information also contributed to improved targeting of at-risk communities, some of whom prefer to seek treatment in the private sector. The experience of the GEMS project confirms that adding private sector provider networks strengthens surveillance data and is critical to current elimination strategies.

### **B. BALANCING INFORMATION NEEDS WITH THE REPORTING BURDEN IS KEY TO THE FEASIBILITY AND EFFECTIVENESS OF PRIVATE SECTOR REPORTING**

PSI experimented with many different iterations of what data to collect from private providers. There was an initial tendency to collect too many different data points because “more data” was expected to be more useful and interesting. Data that were initially collected included those that were (a) required by existing NMP forms to ensure that data would be compatible with national systems, (b) required to calculate indicators for the donor, and (c) otherwise considered useful or interesting to the program to generate insights into patients. It was soon learned that too many data points created additional time burdens on private providers to report and on PSI staff

### **SOURCES**

R. Potter et al., “Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam”, AJTMH 2022. <https://doi.org/10.4269/ajtmh.22-0147>

J. Eliades, “Total Health System Malaria Surveillance”, 2020. <https://www.psi.org/2020/02/malaria-surveillance/>

### **SOURCES**

Brief: DHIS2 for Malaria Surveillance: Strengthening Malaria Programming by Analyzing Real-Time Data with DHIS2. DHIS2 Symposium, PSI 2017.

to verify (and sometimes enter into the system). These data were not always necessary to inform key decisions, and some of the data collected were never used.

To better understand what data were necessary to collect, PSI used Data-to-Action (D2A) frameworks to work backwards from national program requirements to identify the decisions that would need to be made by different stakeholders at different levels of the

health system and what data they were required to inform that decision. The frameworks also allowed PSI to design appropriate data visualizations and thresholds to further support decision-makers. These frameworks helped PSI to strike the right balance between imposing a burden of reporting on private providers and ensuring that the NMP and other decision makers had the necessary data.

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### **C. WITH THE RIGHT SUPPORT AND INCENTIVES, THE PRIVATE SECTOR HAS THE POTENTIAL TO CONSISTENTLY DELIVER HIGH QUALITY DATA**

Experiences collecting data through project monitoring demonstrated that with comprehensive support, including regular supportive supervision visits, private providers achieved high reporting rates with acceptable levels of quality. Other contributors to ensuring high levels of reporting were a clear directive from the government and the development of private sector-specific SOPs. PSI also followed up with providers to encourage regular reporting in various ways including visits, calls, and exchanging monthly data for commodities. Annualized reporting rates were high in terms of the percentage of expected monthly reports received in a calendar year. These ranged from 93% to 100% each year in Cambodia; 98% to 99% in Lao PDR; 76% to 89% in Myanmar (with a larger, more diverse and complex network). In Vietnam, annualized reporting rates increased year-over-year from 75% in 2017 to 100% in 2019.

Initially, PSI manually verified reported data by checking against used RDTs. When electronic reporting was introduced, verification also took place against paper records. These approaches typically revealed that data were accurate and complete. Later in the program, PSI conducted annual data quality assessments using a standardized tool adapted from the MEASURE Evaluation Data Quality Assessment Tool to monitor availability, completeness, accuracy, timeliness, integrity, confidentiality, and precision of routine data collection (MEASURE Evaluation, 2017). These quality assessments revealed that the accuracy of malaria case data reported from private sector was greater than 95%. Rigorous quality assurance was essential to building confidence in the data, which will be further discussed in theme 4 (integrating private sector data into national surveillance systems).

#### **SOURCES**

R. Potter et al., “Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam”, *AJTMH* 2022. <https://doi.org/10.4269/ajtmh.22-0147>

Closeout Achievements: Cambodia 2020

Routine data quality assessments, all countries, 2018 – 2022.

## **D. TECHNOLOGY CAN FACILITATE PRIVATE SECTOR REPORTING, BUT MUST BE USER-CENTERED, FIT FOR PURPOSE, WITH OPTIONS PROVIDED**

From 2016 – 2022, as many NMPs were shifting or considering transitioning from paper to electronic reporting, PSI tried different technological solutions, including many iterations in different country contexts, to facilitate reporting and support quality assurance. Each of the reporting channels presented benefits and drawbacks, which were documented through program learning. These included:

- Paper forms: These followed national forms and were collected monthly by PSI staff and/or local public health centers. Particularly for providers in remote areas, data collection could be slow, with the need for data entry also slowing data use.
- Stand-alone mobile app: A visual app was designed to be easy to use for private providers with prompts and instructions in local languages guiding them through the testing and treatment process. The app was provided on project-owned smartphones issued to providers in Cambodia, which was costly and created issues with updates and loss. In Lao PDR, the same app was installed on provider-owned Android phones but was not available to providers without smart phones or to those using iOS, which limited widespread adoption of the app. Solutions were found to updating the app remotely, rather than collecting the smart phones for manual updating. See Lao PDR Case Study: Evolving Innovations for Data Collection, Integration, and Use for more details on overcoming digital reporting challenges.
- DHIS2 tracker app: While less visually attractive, this app was easy to install on providers' smart phones and ensured compatibility with DHIS2. It remained relatively user friendly, although less so for providers who were less comfortable using technology, often those who were older.
- Chatbots on social media messenger apps: An innovation in reporting was using messenger apps that private providers were already familiar with (e.g., Facebook Messenger in Myanmar and Laos, Zalo in Vietnam) and creating chatbots to guide providers through the data

## **SOURCES**

R. Potter et al., "Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam", *AJTMH* 2022. <https://doi.org/10.4269/ajtmh.22-0147>

Brief: Case Surveillance in the Private Sector (Cambodia); Evidence of how approach evolved, (e.g., from MCS App to DHIS2 tracker, to WhatsApp, etc.). [www.psi.org](http://www.psi.org)

Brief: What Does It Take To Establish Disease Surveillance Mechanisms: Six Lessons Learned from the Nationwide Deployment of a DHIS2-Based Integrated Notifiable Disease Surveillance System in Laos. [www.psi.org](http://www.psi.org)

required for reporting in a language and platform familiar to them. Data collected in this way were automatically uploaded to DHIS2, ensuring rapid availability.

Based on routine data quality assessments (RDQA) in all four countries measuring data availability, completeness, accuracy, timeliness, integrity, confidentiality, and precision, these quality assessments revealed that the accuracy of malaria case data reported from private sector was 90% in Cambodia, 99% in Lao PDR, 98% in Myanmar, and 99% in Vietnam. PSI found that digital reporting tools – when appropriately designed and accepted by users – can reduce errors to improve data quality and can also improve the timeliness of data available for analysis. When data from apps are integrated into an information system (in this case, DHIS2), visual dashboards and reports can be automatically generated to aid interpretation and facilitate action.

## **E. COLLECTING PRIVATE SECTOR DATA CAN BE COST-EFFECTIVE WITH THE RIGHT TOOLS AND SYSTEMS**

Figure 1 demonstrates the diversity of financial and economic cost drivers in Cambodia, Lao PDR, and Myanmar. Financial costs included the money spent on resources used for electronic surveillance interventions, while economic costs include all costs, including opportunity costs (e.g., the value of private providers' time spent on program activities), donated goods, and volunteer time. Both financial and economic costs include staff costs for the activities.

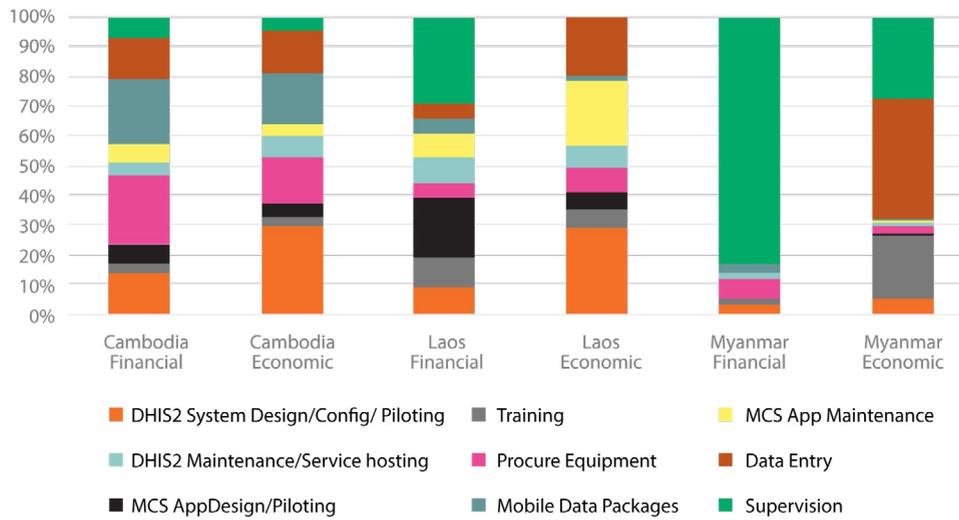
Cost drivers of private sector data systems varied with the operational settings and number of private sector outlets included. Variables included whether purchased or personal mobile devices were used and whether electronic (mobile) reporting was introduced at the provider level or among field officers who support multiple providers for case reporting. The annual economic cost per private provider surveilled was \$82 in Myanmar (no dedicated app, large number of providers), \$371 in Cambodia (phones were provided to users), and \$354 in Lao PDR (relatively small network, no devices provided to users). Most cost drivers were related to supervision visits. The costs in Cambodia were highest as the project had created a dedicated reporting app and provided smartphones and data packages to the network. The total annual cost of PSI's electronic surveillance intervention in the three countries comprised 0.5–1.5% of the total annual malaria national strategic plan budget and 7–21% of the total national malaria strategic plan surveillance budget in Lao PDR and Myanmar.

### **SOURCES**

Levin, A., Potter, R., Tesfazghi, K. et al. Costing electronic private sector malaria surveillance in the Greater Mekong Subregion. *Malar J* 20, 192 (2021). <https://doi.org/10.1186/s12936-021-03727-w>

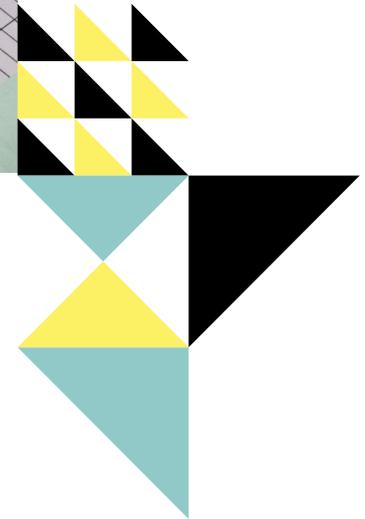
It was found that electronic reporting is likely to be more cost-effective and sustainable in the long run, as once it is established, tested and running, it is not necessary to collect, verify, and enter data each month. Costs can be minimized if providers can use their own mobile devices and if reporting can be done

on an app with which users are already familiar. Other gains of implementing electronic systems included reduced cost for travel time and data entry and availability of real time data that could help improve the speed of public health decision making.



**Figure 1:** Financial and economic costs of electronic data collection in Cambodia, Lao PDR, and Myanmar (Levin, 2021)





# INTEGRATING PRIVATE SECTOR DATA INTO NATIONAL SURVEILLANCE SYSTEMS

While collecting high quality data from private providers was the first step, these data would only be of use if they were available to national decision makers and integrated into national health information and surveillance systems. Once again, a one-size-fits-all approach was not possible, and different approaches were tried in each country.

The experience from this malaria private sector data integration serves as proof of concept and opens the door for private sector reporting for other diseases or health areas. In Myanmar for example, the digital tools for malaria surveillance were applied to TB and other communicable disease surveillance in the private sector. Likewise, in Vietnam PSI adapted the Zalo malaria chatbot to collect data on COVID-19 at the onset of the pandemic.

## KEY LEARNING

### **A. BUILDING TRUST BETWEEN THE PUBLIC AND PRIVATE SECTOR IS THE FIRST STEP TOWARDS DATA INTEGRATION AND USE**

PSI quickly learned that having the data was not enough to ensure it would be accepted for integration into the national information system. Generally, integration first required building a positive partnership between each country's NMP and PSI, which was more challenging in countries where PSI was a relatively new player in this space. Next, it was also important for the NMP to recognize the value of having private sector data, which was not evident in all countries – particularly where there was skepticism regarding the role and quality of care provided by the private sector. Thirdly, it required building confidence in the quality of the data itself. This often needed to be achieved through rigorous testing and verification processes – first by PSI and sometimes also by the national health system, including through joint supervision visits. This process was not initiated soon enough on PSI's side and led to important lessons learned.

### **B. INTEGRATING PRIVATE DATA INTO PUBLIC SYSTEMS IS AN ITERATIVE AND ADAPTIVE PROCESS**

Once these relationships, recognition, and trust were established, PSI worked together with the NMP in each country to design the most appropriate system to integrate data, as follows:

- In Cambodia, hard copies of paper forms were submitted to operational districts for entry into the national malaria information system (MIS).
- In Lao PDR, standard reports for aggregated case data were generated monthly from DHIS2 and submitted to district malaria staff for entry into the national health management information system (HMIS). In addition, an automated electronic reporting mechanism was developed to push confirmed malaria case reports from the project's information system to the national HMIS.
- In Myanmar, standard reports were generated monthly and submitted to national, state/regional, and township levels via Excel sheets for entry into the national surveillance system.

#### **SOURCES**

PSI, "Adapting Private sector surveillance strategies from the Greater Mekong Subregion to high-burden settings", Learning paper, 2021. [www.psi.org](http://www.psi.org)

- In Vietnam, private sector data were extracted from DHIS2 into Excel and submitted to the provincial level monthly for inclusion in reporting to the NMP following data verification by local authorities.

These processes all required different data flows, and distinct roles for the national and sub-national health authorities and PSI. However, the integration process has been considered successful, as private sector data is now being used and reported into the WHO World Malaria Report. The consistency of data reported from the national malaria system to this report compared with case data captured in PSI's database, for instance, suggests that the integration of private sector case data was highly functional.

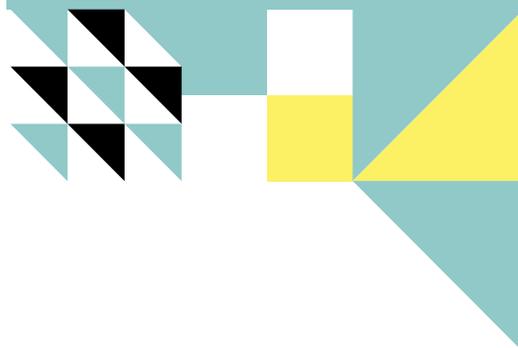
### **C. INTEGRATING PRIVATE SECTOR DATA INTO PUBLIC SYSTEMS CAN BE COST-EFFECTIVE**

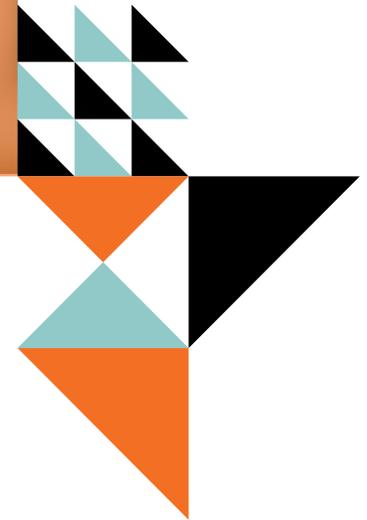
Most cost drivers of surveillance systems are related to data collection, and as discussed above, electronic surveillance systems can be financially affordable over time – particularly compared to paper-based systems. Once data from private providers are available in electronic format, other costs will depend on how much travel and human resources are necessary to supervise, verify, and support the system. The data collection tool then needs to be interoperable with the HMIS, which requires a consultative design process at each stage of the data flow process. Getting the design right from the beginning and involving different stakeholders in ensuring the design is fit for purpose, while building buy-in, can save time and money in the longer-term. Investment may be needed to support training and any change management support, but once the system is up and running, additional costs to integrating private sector data into national surveillance systems are negligible.

While it may appear cost effective to replicate a working system from one context to another, experience from working in 4 different country contexts demonstrates that adaptation is always necessary. This is important not only to adjust for different contexts, but also to build acceptance of the new system along the way. Uptake and sustainability will be higher with a participatory and phased process, addressing users at different levels of the health system separately to ensure a system that works both from a top-down and bottom-up perspective. Once this system is operational for one disease in a health system in a specific location, building in data from other diseases or programs may also lead to economies of scale in terms of system management and maintenance.

### **SOURCES**

Levin, A., Potter, R., Tesfazghi, K. et al. Costing electronic private sector malaria surveillance in the Greater Mekong Subregion. *Malar J* 20, 192 (2021). <https://doi.org/10.1186/s12936-021-03727-w>





# UNDERSTANDING AND ENGAGING AT-RISK COMMUNITIES

The GEMS original theory of change did not include community engagement, as it was already established that private providers were an important source of care. However, PSI recognized that it needed to understand communities better – particularly in remote areas – to support consumers to navigate through the mixed health system. It was also necessary to identify the existing barriers to seeking malaria services to inform the design of appropriate service delivery mechanisms that

are responsive to consumers' evolving needs and preferences. This need was reinforced after listening to providers regarding their concerns about consumers' delayed treatment-seeking behavior, reluctance to take a malaria test, and not completing treatment. PSI therefore piloted different approaches to understanding consumers – particularly in at-risk communities – to ensure that the program targeted the right people in the most appropriate way.

## KEY LEARNING

### **A. DIFFERENT FACTORS DRIVE A COMMUNITY MEMBER'S CHOICE OF HEALTH CARE PROVIDER, INCLUDING PROXIMITY, COST, CONVENIENCE, AND TRUST IN OR PERCEIVED QUALITY OF PROVIDER**

PSI undertook several types of studies to understand consumers, their needs and preferences, and the barriers they face. Differences were found between and sometimes within countries in where treatment is first sought, and why. A respondent-driven sampling study identified the top three reasons for preferring a particular health facility in Cambodia were proximity (37.7%), quality of service (16.3%), and trust in provider (15.2%); in Vietnam the top reasons were: perceived proximity to provider (87.8% of forest-goers); cost (68% of forest-goers); and availability of services (45.8%). In Myanmar, ethnographic research revealed that the choice of providers was different if the fever occurred in the village or forest. Reasons for choosing providers included convenience, trust, long-term relationship with the provider, and flexible payment methods. For fever episodes, the top source was the neighborhood Community Health Volunteer (CHV) followed by basic health staff. There was also a preference for providers within individuals' villages (both in village and forest), making malaria diagnosis and treatment within 24 hours difficult in some cases – particularly if the fever occurs whilst in the forest.

In Vietnam, forest goer households, defined as people who live inside or within 15 km of the forest and go into the forest at least one night a week or two nights a month, had access to different types of providers in their village: 91% had access to a PSI-supported provider, 47% to private semi-formal providers, and less than 10% to public health facilities. About half (48%) visited providers in the village when they had fever, more than a third (37%) stayed home or self-medicated, while 15% visited providers outside their village. Forest goers were significantly more likely to choose nearby providers (odds increased by 6% with each 1-minute reduction in walking time). Compared to private semi-formal providers, forest goers were significantly more likely to choose public health facilities (adjusted odds ratio = 4.1) or volunteers/PSI-supported providers (adjusted odds ratio = 5.7). These

## SOURCES

Paudel, M., Tesfazghi, K., Nguyen, H. et al. The use of respondent driven sampling to assess febrile illness treatment-seeking behaviours among forest-goers in Cambodia and Vietnam. *Malar J* 20, 477 (2021). <https://doi.org/10.1186/s12936-021-04001-9>

ASTMH 2020 Poster: Choice of health service providers among the forest goer population in Myanmar

## SOURCES

ASTMH 2020 Poster: Insights on forest-goer health seeking journeys for febrile illness in Cambodia and Vietnam using respondent-driven sampling

findings highlighted the importance of access to qualified providers among the rural forest goer population, as they would choose qualified providers if available.

Among forest-goers in Cambodia, private health facilities (41.2%) were the most preferred place of treatment for febrile illness, followed by CHWs (31.4%) and public health facilities (25.3%). In Vietnam, 44.5% preferred community health facilities, followed by private health facilities (39.3%) and public health facilities (10.8%). In terms of where forest-goers actually sought care, private health facilities was more commonly used in Cambodia than in Vietnam (38% vs. 19%), while public sector treatment seeking was more common in Vietnam (46% compared to 18% in Cambodia). Almost a quarter of respondents sought care from community-based providers in Cambodia while no respondent mentioned CHWs as their source of care in Vietnam.

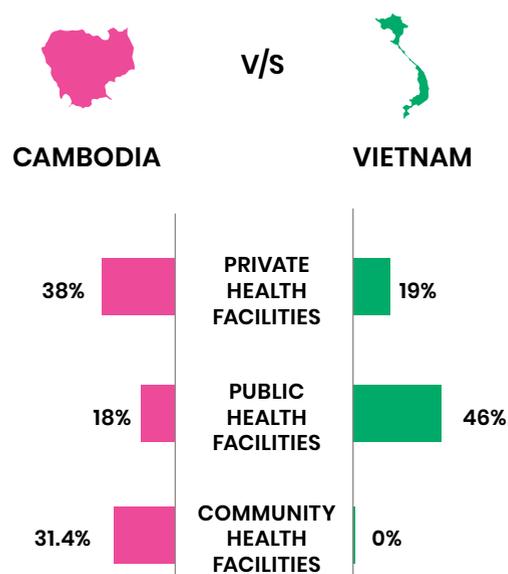
## B. THE DIFFERENT BARRIERS, PREFERENCES AND BEHAVIORS BETWEEN AND WITHIN COMMUNITIES NEED TO BE UNDERSTOOD FOR EFFECTIVE TARGETING

‘Hard-to-reach’ populations remain hard to reach without appropriate research to understand the socio-economic-political environment and to identify the key dynamics determining uptake of services by the target communities and populations. Robust implementation research with a strong ethnographic component can help tailor malaria elimination strategies to local contexts .

Informed by this implementation research, PSI tried various strategies to improve access to services for remote or marginalized populations – such as forest goers in Cambodia and Lao PDR, and ethnic minority groups in Vietnam – with mixed success. Different factors limited or enhanced the effectiveness of participatory approaches in the different settings.

In Vietnam, inter-ethnic tensions and sensitivity around forest-work negatively affected local populations’ health-seeking behaviors and consequent uptake of malaria testing and treatment. In Lao PDR, the location of project-supported pharmacies in the district center was not appropriate for populations in remote villages. In Cambodia, recruiting community malaria-workers elected by community members did reach the remote forested areas where people visited or stayed. In addition to the ethnographic research, PSI implemented a user-centered design methodology and

### FOREST-GOERS PREFERRED PLACE OF TREATMENT FOR FEBRILE ILLNESS



### SOURCES

Masunaga Y, Muela Ribera J, Nguyen TT, Tesfazghi K, Peeters Grietens K. In search of the last malaria cases: ethnographic methods for community and private-sector engagement in malaria elimination in Vietnam, Laos, and Cambodia. *Malar J.* 2021 Sep 17;20(1):370. doi: 10.1186/s12936-021-03903-y

approach – internally called Empathy, Insights, Prototype (EIP)\* – which resulted in actionable insights to inform intervention design. For example, in Vietnam, it emerged that people did not want to be tested in the non-formal sector because of the lack of medical background among these providers, even though they were sometimes more convenient. It was also confirmed in all contexts that well-known figures in the communities played important roles as trusted influencers within the community and could be useful allies.

PSI was surprised to find the diversity in attitudes and practices, even among populations living in the same geographic area. This finding highlighted the importance of the research in recognizing these differences for more effective intervention approaches, as well as the need for a mixed health system that can respond to the different needs, preferences, and barriers that different groups face in accessing health care. Similarly, communication messaging can be more effective when more targeted at a specific group that speaks to their specific situations, rather than mass media campaigns.

Recent experience in Myanmar has also revealed the importance of constantly adapting interventions to respond to the context. For example, it has been necessary to change approaches to facilitating access to health services by bringing some vulnerable people to a specific location for care, instead of going to them. Who people trust can also change over time and needs to be monitored to ensure the credibility of messaging.

### **C. COMMUNITY ENGAGEMENT CAN INCREASE KNOWLEDGE AND IMPROVE TREATMENT SEEKING BEHAVIORS OF AT-RISK COMMUNITIES**

PSI observed that the results of social behavior change and IEC campaigns diminish over time in Vietnam, even when messages were designed in a participatory manner. More direct community engagement may be more effective in influencing behaviors, particularly when they are targeted to a specific group that may otherwise be excluded. Following a user-centered methodology and process, PSI aimed to increase testing of fevers among ethnic minority groups and build trust between providers and communities in four higher burden provinces in Vietnam. The project reached more than 7,500 people in 144 communities through community events and more than 5,100 people volunteered for malaria diagnostic tests (from which 29 malaria cases were identified). Seventy

\*Human Centered Design (HCD) is a process for arriving at transformative solutions and was originally developed by design and innovation firms to create new offerings for consumers. PSI's adapted process, called EIP (Empathy, Insights and Prototyping), allows PSI to apply the best of a multi-disciplinary approach, with roots in commercial marketing strategy and techniques and tools from human centered design to better understand users, dig deeper into the whys behind behavior, and quickly test out proposed solutions before investing in them.  
<https://www.psi.org/keystone/design-phase/>

### **SOURCES**

Aung YK, Zin SS, Tesfazghi K, Paudel M, Thet MM, Thein ST. A comparison of malaria prevention behaviours, care-seeking practices and barriers between malaria at-risk worksite migrant workers and villagers in Northern Shan State, Myanmar-a mixed method study. *Malar J.* 2022 Jun 3;21(1):162. doi: 10.1186/s12936-022-04193-8

percent of respondents reported improved confidence in their knowledge of malaria, and almost all (98%) reported being able to seek prompt treatment from providers. Eighty percent found the information received in the community dialogues/ events useful and 90% of respondents were satisfied with the attitude and skills of health care providers at the events.

**D. ADAPTING SERVICES AT THE LAST MILE CAN BE EFFECTIVE, BUT CAN ALSO BE RESOURCE INTENSIVE AND REQUIRE APPROPRIATE TECHNICAL EXPERTISE**

When PSI noticed in Cambodia that case detection by health care providers in rubber plantations and worksites was falling, but increasing in nearby areas, a change in strategy was needed. It was observed that new communities were emerging in or near forested areas that were not yet under official administration and therefore did not have easy access to health care. A user-centered design process was undertaken with these communities, which involved community representatives, the nearest local authorities, and PSI staff. This process highlighted complex community dynamics such as competing priorities (forest/economic, social/religious) and political tensions between newer communities and more settled ones. The resulting new intervention was CLIME (Community-led Interventions for Malaria Elimination), which included a combination of mobile malaria workers (MMWs), community influencers, and organizing the new communities into household clusters to combat malaria.

The subsequent ethnographic study to further understand these communities and assess the effectiveness of CLIME identified factors contributing to success. These included the participatory MMW selection process, their position in the community as well as their location, and the improved access to care. The study also identified some wider social impacts such as a reinforced and improved network around MMWs, improved relations among community members and ethnic minorities, and the potential to improve health seeking behaviors in general. These findings also reinforced the importance of community engagement in building resilience in health systems. By building trust-based relationships, engagement makes communities more sustainable, responsive, and able to recover from shocks.

**SOURCES**

ASTMH 2020 Poster: Community engagement to strengthen malaria elimination in 4 provinces in Vietnam. This qualitative study used exit interviews with 160 forest-goers randomly selected from 10 community dialogues and 8 community events during which health care providers gave information and offered free malaria testing.

**SOURCES**

Human Centered Design Community Engagement Report: PSI Cambodia, 2019

**SOURCES**

Masunaga Y, Muela Ribera J, Nguyen TT, Tesfazghi K, Peeters Grietens K. In search of the last malaria cases: ethnographic methods for community and private-sector engagement in malaria elimination in Vietnam, Laos, and Cambodia. *Malar J.* 2021 Sep 17;20(1):370. doi: 10.1186/s12936-021-03903-y

Designing, implementing, and assessing a new approach in Cambodia was necessary but slow and labor-intensive, involving significant travel to remote areas to meet with communities to gain insights, build consensus, and provide training, supplies, and follow-up. In Vietnam, on the other hand, the user-centered design process itself was travel- and labor-intensive during the design phase, but the resulting intervention only required a tweak in existing activities and limited additional cost. This adaptation included tailoring existing communication strategies and adjusting where and how services are delivered. The human-centered and community-led

design approach also required certain expertise in ethnography and behavior change – as well as the right people and personalities to make a powerful connection with the right person in the community. Costs could be reduced, and effectiveness could be enhanced by ensuring effective coordination with other actors, including sharing tools (such as communication outputs, training materials, and standard operating procedures) and organizing joint meetings. Coordination can reduce the duplication of efforts and the burden on staff and the communities involved.

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# ETHNOGRAPHIC STUDY RESULTS

## **CAMBODIA**

Individuals creating new communities in and around forests – including in recently deforested areas – were considered at increased risk of malaria during the GEMS project. At the same time, people on worksites were showing decreased malaria cases. An ethnographic study was conducted to better understand the new communities and found that although new, two types of social cohesion existed: one where interactions were limited to business transactions and another where community members provided reciprocal support. Communities sought care in various places, including from public facilities, private clinics, local informal health providers, Village Malaria Workers (VMWs), and MMWs. They usually preferred private providers (due to the better quality of care) and trusted local informal providers. Access to health facilities was usually difficult due to road conditions, and communities usually practiced home and self-treatments before seeking care from a provider. Treatment-seeking behaviors depended on multiple factors including socio-economic status, perceived severity of the disease, awareness of services, previous experience with health providers,

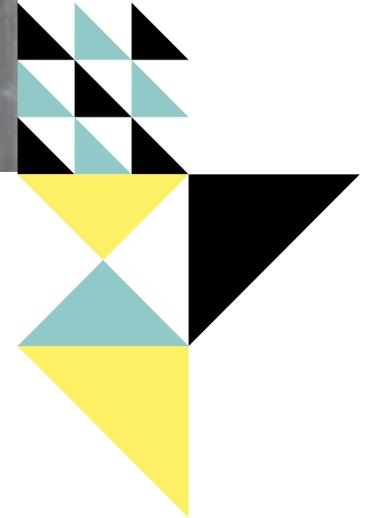
and distance to health care. The study identified that communities did not perceive malaria as one of the main health issues, and individuals generally had good knowledge about malaria transmission and symptoms, as well as protective measures. However, there were challenges to testing (e.g., lack of knowledge on asymptomatic carriers, false rumors) and treatment (e.g., intermittent medicine use). These findings highlighted the need for appropriate messaging to promote testing and treatment. Working with MMWs was a successful approach to engage communities as they were usually well-recognized and accepted by communities. However, there were some challenges highlighting the need for continued support to ensure the MMWs are accepted, well-performing, and that needs from the communities are met. It was also found that communities were usually active and willing to participate in community development, namely in activities brought from outside, such as the CLIME program. Also see the Cambodia Case Study: Community-Led Malaria Elimination.

## LAO PDR

For forest-goers, the main perceived benefit of using protective measures against malaria was to avoid the nuisance of mosquito bites. Treatment-seeking usually started with the nearest health provider and would only move to a higher level of care if there was a perceived treatment failure. People with more limited access to health care tended to rely on traditional practices such as herbal medicine or shamanism. For malaria, people usually chose village health workers (VHW) as the first contact (when they could find the VHW in their village). In remote villages, access to care was much better during the dry season than during the rainy season due to the better condition of the roads in dry season. Access was also easier in villages with nearby health facilities and for people staying at the worksite for prolonged periods of time. The findings highlighted that the role of VHWs was key, especially when VHWs were located at worksites where they could target people staying in rice-fields or forests. However, VHWs are often busy with their own work as farmers, and sometimes they were not properly supplied with RDTs and antimalarials. Hence, improving VHWs' resources and skills is crucial for promoting testing and increasing prompt treatment. The study identified that a supportive therapy management group (or the group of people who care and support the patient) was an enabler for access to care and (probably) adherence to treatment.

## VIETNAM

For members of ethnic minority groups, the greatest perceived obstacle was related to low quality of care. The easy accessibility to facilities was one of the reasons why Community Malaria Champions (CMCs) and other strategies aiming at reaching "hard to reach" populations were not very successful. Additional reasons were that CMCs were not formalized health officials so they were not trusted among communities, and people preferred to go to places where they could be tested and treated, rather than only tested. People usually sought care from both the private and public sectors, although people had a preference for private facilities – if they could afford them – because of higher perceived quality of care and medicines, reduced waiting times, and the respect shown to patients. Nevertheless, most malaria cases were detected and treated at public health facilities, particularly the Commune Health Centers (CHCs), mainly because of availability of drugs and free treatment. People usually chose where to go based on their symptoms, distance to care, affordability, previous experiences, and the attitude of health providers. Emerging suggestions included shifting from mass communication to direct health provider-to-patient communication, with health messages that are clear and comprehensive to patients. This approach requires understanding the logic, customs, beliefs, habits, and the world view of the local population and involving them in the process of developing messages. It was also suggested that adherence to treatment could be improved by giving people accurate information and employing community members (e.g., CMCs, VHWs) to follow up on treatment in close coordination with health providers.



# SUSTAINING PUBLIC-PRIVATE SECTOR ENGAGEMENT THROUGH HEALTH SYSTEM STRENGTHENING

While the first phase of GEMS contributed to strengthening and demonstrating private provider quality of care and linking quality-assured data into national information systems, GEMS+ aimed to ensure that this quality and linkage was sustainable. In retrospect, PSI recognizes that it should have

started this process earlier and engaged the National Malaria Programs more fully from the beginning of the process. Once again, the path taken in each country varied; however, the following key lessons were shared across the region

## KEY LEARNING

### **A. THE QUALITY AND VALUE OF PRIVATE SECTOR DATA NEEDS TO BE DEMONSTRATED TO BUILD TRUST PRIOR TO DATA INTEGRATION**

Private sector data can only be integrated into national systems when the government: (a) sees the value of integrating the data and (b) trusts the robustness of the data. If private providers are detecting only a small percentage of the national caseload, the government may perceive that it is not worth the time and effort to capture this data even though once elimination is in sight; however, it is essential to find and report all cases from all sectors\*, according to WHO guidance for certification of malaria elimination (WHO, 2022). In Vietnam, which has now transitioned 292 private providers to government supervision (including 45 that now receive support from another NGO), a project evaluation concluded that key aspects to support a successful transition of private sector oversight to the to NMP included:

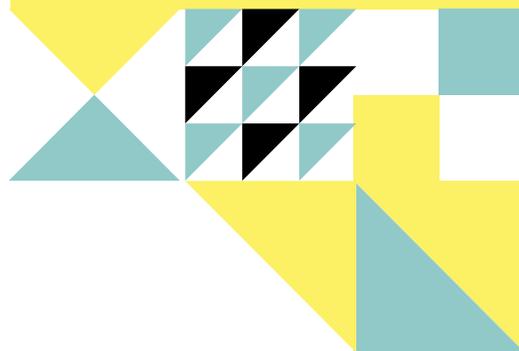
- Building capacity and confidence of the private sector in malaria control to reduce the work burden of the public sector in providing health care services in malaria
- Providing incentives to support private sector engagement, namely finding a business model to sustain the delivery of professional services to the patient beyond the project period
- Supporting the private sector with tools and activities to support their role in malaria control and prevention in communities, particularly in remote villages to ensure that they can provide sufficient services
- Establishing strong coordination mechanisms between public health authorities and facilities and the private sector to support the development of an enabling policy environment
- Integrating private sector data into the national system to help the authorities have a better overview of the malaria situation in the country
- Planning and communicating the project exit strategy to partners, target groups and other stakeholders

### **SOURCES**

\*The following milestone is required by the WHO for malaria certification: “Private, military, police, faith-based and nongovernmental organization clinics also report case-based data to the ministry of health.” WHO (2022), Preparing for certification of malaria elimination, second edition. WHO: Geneva. <https://www.who.int/publications/i/item/9789240062009>

Outcome Harvesting Evaluation, Vietnam 2022

J. Wheeler et al, “Integrating Private Providers into Malaria Elimination Efforts”. PSI June 2022 [www.psi.org](http://www.psi.org)



Six key elements need to be transitioned to the government, and each requires clarity, communication, and a plan for support. This is particularly challenging when the public sector – particularly at the sub-national level – is already over-stretched.

A successful transition of the private sector to the National Institute of Malariology, Parasitology and Entomology (NIMPE) in Vietnam for integration into national malaria strategies and management structures required:

- A strong coordination mechanism between the public health authorities and facilities and the private sector
- Clear guidance, instruction, or regulation issued by NMP on the provision of drugs and tests by the private sector
- Regular reporting of all detected cases from the private sector and clear flow of reports received from the private sector to the health authorities
- Budget for the sub-national authorities to implement activities related to the malaria elimination program
- A sustainable financial mechanism to ensure the availability of malaria tests and drugs in the private sector

Different levels of Vietnam’s national health system are now heavily involved in monitoring and supervision to ensure that they remain satisfied with data quality, from the commune and provincial levels to the national level. Similarly, the experience in Cambodia further highlighted the importance of ensuring that the right level of government is appropriately involved in terms of who makes decisions and which level will be responsible for what. Often, all levels – facility, district, provincial, and national – need to be involved and need to be engaged as early as possible, with support provided to work towards sustainability as familiarity and confidence is built with the providers and their data.

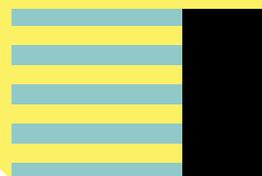
PSI’s experiences also align with recommendations from WHO / Country Connector “The Governance Behaviours: Socio-ecological approach to governing the private sector in health,” 2022. Further resources can be found at <https://ccpsh.org/>

Key steps and behaviors include:

- Deliver strategy
- Align structures
- Enable stakeholders
- Build understanding
- Foster relations
- Nurture trust

GEMS+ Transition Evaluation, Vietnam 2022

Closeout Achievements: Cambodia 2020



## 6 TRANSITION COMPONENTS



## **B. PRIVATE SECTOR ENGAGEMENT APPROACHES NEED TO BE REFINED AND SIMPLIFIED PRIOR TO HANDOVER TO THE GOVERNMENT**

Once the government is satisfied with the value and quality of private sector care and data, simplification of the private sector engagement process may be required before it can be handed over for integration into the national system. PSI was fortunate to have the financial support to ensure that the people, structures, and incentives were in place to ensure the necessary support and supervision for the private sector. The government is not always able to take this same approach, at least not without significant additional funding. It can be important to cost out the system, identify the different cost drivers, and then determine what can be reduced to make it sustainable without compromising the quality or the value of integration.

Reducing costs to enable sustainable integration can include shrinking the size of the private sector network or reducing the type and frequency of support included. The number of private providers in the network can be effectively refined using health-seeking behavior data and epidemiological data from the national malaria stratification to identify areas where private providers are needed to complement other health care providers. Reviewing individual provider performance (in terms of quality of care and case detection) can also be useful to determine who should remain in a refined network. This exercise was completed by PSI in Myanmar in response to a funding reduction and resulted in a smaller but better targeted network in terms of test positivity rates and quality assessment scores (ACTwatch Group. P. S., 2017). The criteria used for selecting providers that would remain in the network included malaria caseload; proximity to other providers; morbidity rates; presence of high-risk client groups; microstratification; and demonstrated commitment to reporting.

The type and frequency of training, supervisory support, and incentives can also be modified to ensure the maintenance of network integrity, while also ensuring feasibility for the government to integrate data from the private sector into the national health system. These modifications can include updating SOPs and tools that can be sustained through government activities, prioritized in domestic funding, and included in future funding applications. Different approaches need to be tested and costed – including the specific roles and responsibilities for each level of the health system – with

### **SOURCES**

K. Tesfazghi, "Every case counts: Malaria elimination through private sector case management". PSI April 2020, [www.psi.org](http://www.psi.org)

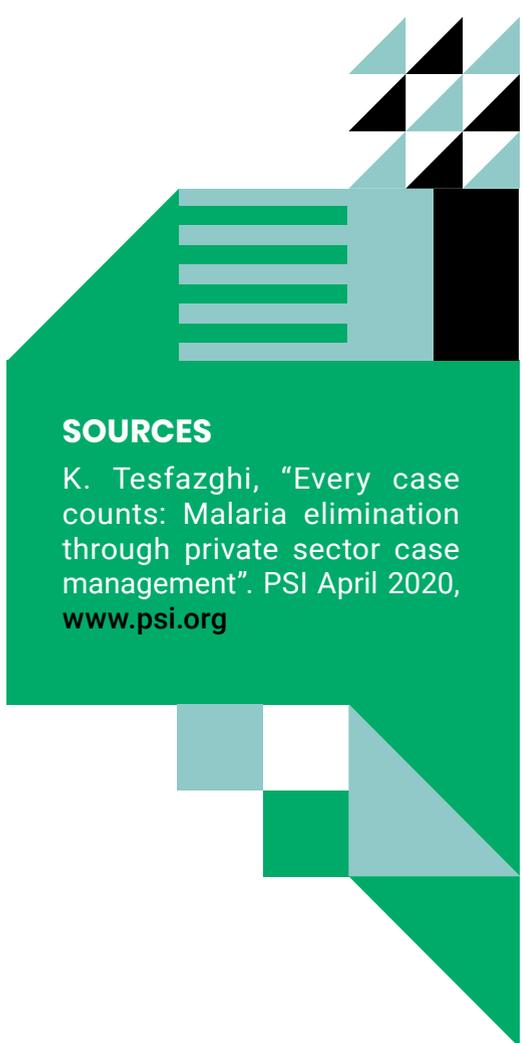
options for how a network or engagement strategy can be further refined over time. While refinement is inevitable, PSI also proposes certain minimum standards to ensure that quality does not suffer. Non-financial incentives – such as recognition or mandatory reporting – can also be used to replace some financial incentives. Training activities for the private can be combined with training for the public sector and technology can also be leveraged to provide some remote training and communication solutions.

### **C. SURVEILLANCE LESSONS LEARNED CAN BE LEVERAGED TO SUPPORT HORIZONTAL MANAGEMENT AND EMERGENCY RESPONSE**

Once private sector data integration is wanted, trusted, and established for malaria, it can then be used as a model for other diseases or health areas. The relationships and SOPs can be easily adapted. PSI has already seen evidence of this with (a) the establishment of emergency operating centers (EOC), and (b) the response to the COVID-19 pandemic. Increasingly, the health system is a knowledge economy, and the more data is readily available, the more power a government has at its fingertips.

In Lao PDR, an assessment at the inception of a public health EOC (PHEOC) project identified factors limiting an efficient and effective response to public health emergencies. These weaknesses included a lack of dedicated emergency operations staff, insufficient funding, the absence of comprehensive emergency response plans and SOPs to guide the PHEOC; an outdated and inefficient disease surveillance system leading to delayed identification of and response to disease outbreaks and poor use of the surveillance data; inefficient supply chain management functions; and a need for critical infrastructure (such as improved internet connectivity). In addition, one of the key challenges was that malaria was not a notifiable disease.

The project worked towards elevating malaria to becoming a notifiable disease to enable a coordinated and decisive response in the event of a disease-specific outbreak and to provide the PHEOC with the required mandate to work with the Lao PDR Center for Malariology, Parasitology, and Entomology (CMPE) to accelerate malaria elimination. The project also improved the physical infrastructure for the overall PHEOC, optimized disease surveillance systems, improved visibility of data on stock consumption levels, built the capacity of personnel, and established mechanisms to improve funding for rapid response activities and for conducting simulations



#### **SOURCES**

K. Tesfazghi, “Every case counts: Malaria elimination through private sector case management”. PSI April 2020, [www.psi.org](http://www.psi.org)

and after-action reviews. Strengthening the PHEOC is expected therefore not only to accelerate malaria elimination, but also to enhance the efficiency and effectiveness of outbreak response and drive timely course correction and coordination at the national and sub-national levels.

Leveraging the private sector linkage also occurred during the COVID-19 response. In Vietnam, for example, a data reporting app allowed fever case reports from a network of hundreds of pharmacies to be used as an additional data source for COVID-19 surveillance. The early integration of private sector data into Lao PDR's PHEOC also enabled this sector to contribute data during the country's COVID-19 response. Myanmar also engaged its community health care providers to mobilize a local COVID-19 response and ensure data were shared with the government. In Laos and Vietnam, PSI is now actively supporting the inclusion of the private sector for notifiable disease reporting in the national systems, building on our experience with malaria under GEMS.

## SOURCES

K. Tesfazghi et al., "Engaging the private sector for improved malaria surveillance: Lessons from the Greater Mekong Subregion". RBM Monitoring and Evaluation Newsletter.

K. Tesfazghi, "Emergency Operations Centers: From Malaria Surveillance to COVID-19 Response in Laos". PSI, September 2020. [www.psi.org](http://www.psi.org)



# LOOKING AHEAD

GEMS was a continuous learning journey for PSI as data were analyzed for decision-making, as malaria elimination efforts evolved, technology changed, and the region responded to a pandemic and significant political unrest. These lessons have aligned with emerging interests in shaping mixed health systems to accelerate progress towards universal health coverage, horizontal health management, shifting policies and funding towards sustainability, and a more people-centered and equitable approach to health care (USAID, 2023). Along with national governments, donors, and consumers themselves, we recognize the opportunity to increase private sector engagement as a component of stronger and more resilient and responsive health systems.

For malaria elimination in the GMS, this required working specifically with private healthcare providers and other market actors – in addition to consumers and government partners – to diagnose barriers together and to generate insights to design solutions that strengthen health systems for the long term that are responsive to consumer needs.

## OUR EXPERIENCE IN THE GMS HIGHLIGHTS

**1** the importance of including provider and consumer voices in the design and implementation of health systems, solutions, and policies 

**2** the potential of private sector integration to increase affordable, high-quality care and advance public health objectives 

**3** the power of digitization and technology to facilitate private sector reporting for improved surveillance 

The innovative approach of working with the private sector on surveillance created data sharing linkages between public and private sectors, thereby providing a more comprehensive perspective to decision-makers. The relationships and data systems that GEMS built for malaria can serve as a platform that can be leveraged for further multisector coordination or data integration in other areas, including for the reporting of notifiable diseases or monitoring drug resistance, which can contribute to health security strengthening. This expertise can be applied to efforts in maintaining malaria elimination and preventing the reintroduction through sustainable and integrated mechanisms. This process has already begun, with national and international partners building on GEMS to support the emergence of EOCs in Laos and Vietnam. This foundation also has the potential to evolve into the integration of private sector providers into national health insurance schemes, which can further increase access to high quality healthcare with potential for more sustainable financing.

GEMS contributed to improving the quality of both care and data and strengthened public-private sector linkages to advance the progress of national strategies by elevating consumer and provider insights to decision-makers to ensure their preferences informed the delivery of care. This has contributed to improved cooperation between the public and private sectors that can continue to be built upon for advancing the quality, access, and security of health systems well beyond malaria elimination. Advances in electronic reporting and quality assessments have improved the timeliness and accuracy of data to support decision-

making and have also been demonstrated to be cost effective. Despite approaching integration with the goal of sustainability, a remaining challenge is now whether public health systems can continue to invest their limited time and resources into maintaining and continually strengthening the necessary systems and technology to sustain private sector engagement in addition to their current responsibilities and evolving

priorities. GEMS has demonstrated the potential of private sector engagement to prepare for and respond to the health challenges of the present and future, and PSI will remain a willing partner of consumers and the public and private health care sectors to continually improve access to high quality, affordable healthcare.



# REFERENCES

- Achmadi, G. a. (2021). Evaluation Report: The Private Sector Transition of the Greater Mekong Sub-region (GMS) Elimination of Malaria through Surveillance (GEMS/GEMS+) Project in Vietnam (2016 – 2021). Washington, DC: Population Services International.
- ACTwatch Group., P. S. (2017). Private sector opportunities and threats to achieving malaria elimination in the Greater Mekong Subregion: results from malaria outlet surveys in Cambodia, the Lao PDR, Myanmar, and Thailand. *Malar J*, 16, 180. doi: <https://doi.org/10.1186/s12936-017-1800-5>
- ACTwatch Group., T. S. (2017). Insights into the availability and distribution of oral artemisinin monotherapy in Myanmar: evidence from a nationally representative outlet survey. *Malar J* , 16, 170. doi: <https://doi.org/10.1186/s12936-017-1793-0>
- Bennett, A. A. (2017). Engaging the private sector in malaria surveillance: a review of strategies and recommendations for elimination settings. *Malar J* 16, 252. doi: <https://doi.org/10.1186/s12936-017-1901-1>
- Brown, M. B. (2022). Motivation to test, treat, and report malaria cases: a quantitative assessment among private sector providers in the Greater Mekong Subregion. *Malar J* 21, 82. doi: <https://doi.org/10.1186/s12936-022-04108-7>
- Khin, H. A. (2016). Oral artemisinin monotherapy removal from the private sector in Eastern Myanmar between 2012 and 2014. 15, 286. doi: <https://doi.org/10.1186/s12936-016-1385-4>
- Levin, A. P. (2021). Costing electronic private sector malaria surveillance in the Greater Mekong Subregion. *Malar J*, 20, 192. doi: <https://doi.org/10.1186/s12936-021-03727-w>
- MEASURE Evaluation. (2017). Routine Data Quality Assessment Tool - User Manual. Retrieved from <https://www.measureevaluation.org/resources/publications/ms-17-117.html>
- NIMPE. (2020). Policy document2699/QD-BYT, . Retrieved from National Institute of Malariology, Parasitology and Entomology (NIMPE): [http://www.impe-qn.org.vn/impe-qn/vn/upload/info/attach/1593593404164\\_HDchandoandieutriSR2020.pdf](http://www.impe-qn.org.vn/impe-qn/vn/upload/info/attach/1593593404164_HDchandoandieutriSR2020.pdf)
- Nonaka D, V. K. (2009). Public and private sector treatment of malaria in Lao PDR. *Acta Trop* 112, 283–287 .
- Potter R, T. K. (2023). Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam. *The American Journal of Tropical Medicine and Hygiene*, 108(2\_Suppl), 14-23. doi: <https://doi.org/10.4269/ajtmh.22-0147>
- USAID. (2023). Health Systems Innovation, Resources. Retrieved from USAID.gov: <https://www.usaid.gov/global-health/health-systems-innovation/health-systems/resources>
- WHO. (2020). World Malaria Report 2020. World Health Organization, Geneva. Retrieved December 2021, from World Malaria Report: <https://www.who.int/publications/i/item/9789240015791>
- WHO. (2022, November 17). Preparing for certification of malaria elimination, second edition. Retrieved from World Health Organization: <https://www.who.int/publications/i/item/9789240062009>
- WHO. (2023). Information, education, and communication: lessons from the past; perspectives for the future. World Health Organization. Geneva: WHO. Retrieved from <https://www.who.int>

# ANNEX 1 – PROGRAM RESOURCES & TOOLS

## PUBLICATIONS

Potter R, Tesfazghi K, Poyer S, Eliades MJ. Private Sector Contributions to National Malaria Surveillance Systems in Elimination Settings: Lessons Learned from Cambodia, Lao PDR, Myanmar, and Vietnam. *The American Journal of Tropical Medicine and Hygiene*. 2023;108(2\_Suppl):14-23. <https://doi.org/10.4269/ajtmh.22-0147>

Brown, M., Bouanchaud, P., Tesfazghi, K. et al. Motivation to test, treat, and report malaria cases: a quantitative assessment among private sector providers in the Greater Mekong Subregion. *Malar J* 21, 82 (2022). <https://doi.org/10.1186/s12936-022-04108-7>

Aung, Y.K., Zin, S.S., Tesfazghi, K. et al. A comparison of malaria prevention behaviours, care-seeking practices and barriers between malaria at-risk worksite migrant workers and villagers in Northern Shan State, Myanmar—a mixed method study. *Malar J* 21, 162 (2022). <https://doi.org/10.1186/s12936-022-04193-8>

Thet, M.M., Khaing, M.N.T., Zin, S.S. et al. Choice of health providers and health-seeking behaviour among forest goer population in Myanmar: findings from a cross-sectional household survey. *Malar J* 21, 382 (2022). <https://doi.org/10.1186/s12936-022-04356-7>

Paudel, M., Tesfazghi, K., Nguyen, H. et al. The use of respondent-driven sampling to assess febrile illness treatment-seeking behaviours among forest-goers in Cambodia and Vietnam. *Malar J* 20, 477 (2021). <https://doi.org/10.1186/s12936-021-04001-9>

Levin, A., Potter, R., Tesfazghi, K. et al. Costing electronic private sector malaria surveillance in the Greater Mekong Subregion. *Malar J* 20, 192 (2021). <https://doi.org/10.1186/s12936-021-03727-w>

Masunaga, Y., Muela Ribera, J., Nguyen, T.T. et al. In search of the last malaria cases: ethnographic methods for community and private-sector engagement in malaria elimination in Vietnam, Laos, and Cambodia. *Malar J* 20, 370 (2021). <https://doi.org/10.1186/s12936-021-03903-y>

## LEARNING PAPERS

Tesfazghi K, Poyer S, Haslam T, Lourenço, C. Adapting private sector surveillance strategies from the Greater Mekong sub-region to high burden settings. *PSI*; 2021. [www.psi.org](http://www.psi.org)

## INDIVIDUAL COUNTRY CASE STUDIES

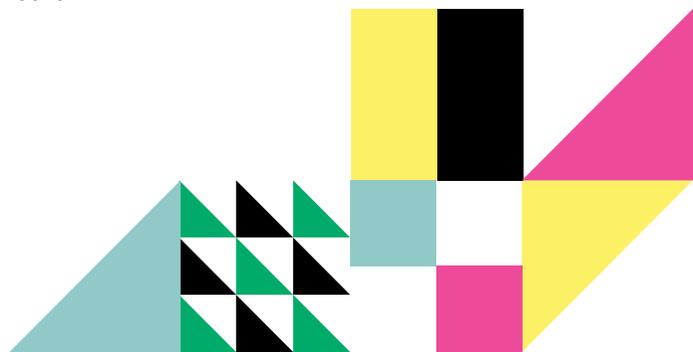
[www.psi.org](http://www.psi.org)

- Community-Led Malaria Elimination in Cambodia
- Evolving Innovations for Data Collection, Integration, and Use in Lao PDR
- Shaping Antimalarial Drug Markets in Myanmar
- Strengthening Public-Private Health Sector Engagement in Vietnam

## COUNTRY MODELS FOR PRIVATE SECTOR ENGAGEMENT IN MALARIA CASE MANAGEMENT

[www.psi.org](http://www.psi.org)

- Cambodia
- Lao PDR
- Myanmar
- Vietnam



## RESEARCH PROTOCOLS

- Provider/Worksite Mapping
- Outlet Survey Protocol
- Mystery Client Protocol
- Dynamic Qualitative Insights Protocol (Provider Motivation)
- Outcome harvesting evaluation protocol
- Empathy, Insights, Prototyping (Human Centered Design) protocols
- Ethnographic Study Protocols
- Forest-goer Surveys
- Household Survey Protocol
- Costing Study

## ADVOCACY AND COORDINATION TEMPLATES

- Provider Recruitment Agreements
- Worksite Owner Agreements
- Worksite Standard Operating Procedures
- Public – Private Memorandum of Understanding
- Certificates

## TRAINING MATERIALS

- National Treatment Guidelines and RDT Best Practices for:
  - » Clinics
  - » Pharmacies
  - » Doctors
  - » Non-formal providers
  - » Community health care workers

## SURVEILLANCE TOOLS

- Reporting Forms
- Reporting Apps
- Quality Assurance App (HNQIS)
- Chatbot Scripts
- Data-to-Action Frameworks

